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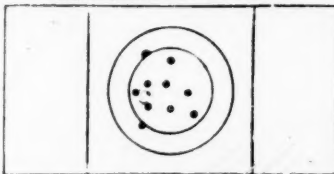
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MEMORANDUM FOR 1897.

The Council having decided that a Gold Medal be granted annually for the best Essay on a Naval or Military subject, make known the conditions of competition:—

- (1) The Candidates must be Members of the Institution, or persons eligible to become Members, according to the following Extract from the Bye-laws, Section II., paragraphs 1 and 2, viz.:—
 1. "Princes of the Royal Blood; Lords Lieutenant of Counties; Governors of Colonies and Dependencies; Officers of the Army, Navy, Marines, Her Majesty's East Indian and Colonial Military and Naval Forces, Militia, Yeomanry, Royal Naval Reserve, and Volunteer Corps, as published in the Official Army and Navy Lists, and Naval and Military Cadets on the recommendation of their Commanding Officers, shall be entitled to become Members *without Ballot* of the Council.
 2. "Ex-Governors of Colonies and Dependencies; Officers who have quitted the Service; Deputy Lieutenants of Counties; Civil Functionaries who are or have been attached to the Naval and Military Departments; the Master, Deputy Master, and Elder Brethren of the Trinity House; and Army and Navy Agents; shall be *eligible* to become Members *by Ballot* of the Council."
- (2) The subject for this year shall be of a Naval character.
- (3) The Essays must not exceed 48 pages (exclusive of tables), of the size and style of the "*Journal*," each page averaging 540 words.
- (4) When a reference is made to any work, the title of such work to be quoted.
- (5) The Essays must be received by the Secretary on or before the 15th NOVEMBER, 1897.
- (6) The Essays must be strictly anonymous, but each to have a Motto, and to be accompanied by a sealed envelope with the Motto written on the outside, and the name of the Candidate inside.
- (7) The Essays will be submitted for decision to three Referees chosen by the Council; but no awards will be made by them in favour of any Essays which do not, in their opinion, attain a sufficient standard of excellence.
- (8) The award of the Referees will be made known, and the Medal will be presented to the successful candidate (or his representative) at the Anniversary Meeting, and his Essay will be printed in the "*Journal*."

The following is the subject for the Essay for the year 1897:—

"Protection of Commerce during War."

It is particularly requested that Competitors will have their Essays type-written, *in triplicate*, in order to save both the time and labour of the Referees.

Rejected Essays will be kept for one year, and will then be destroyed, if not applied for.

COLONEL F. C. TRENCH GASCOIGNE, 2nd Yorkshire Volunteer R.E., late Captain 66th Foot, having again given the sum of sixty guineas as prizes for the writers of the two best Essays for this year's competition, thirty guineas will be given with the Gold Medal of the Institution, to the writer of the best Essay, and thirty guineas to the writer of the Essay next in order of merit.

The awards to be called the R.U.S.I. Gold Medal and Gascoigne Prize, and Second Gascoigne Prize.

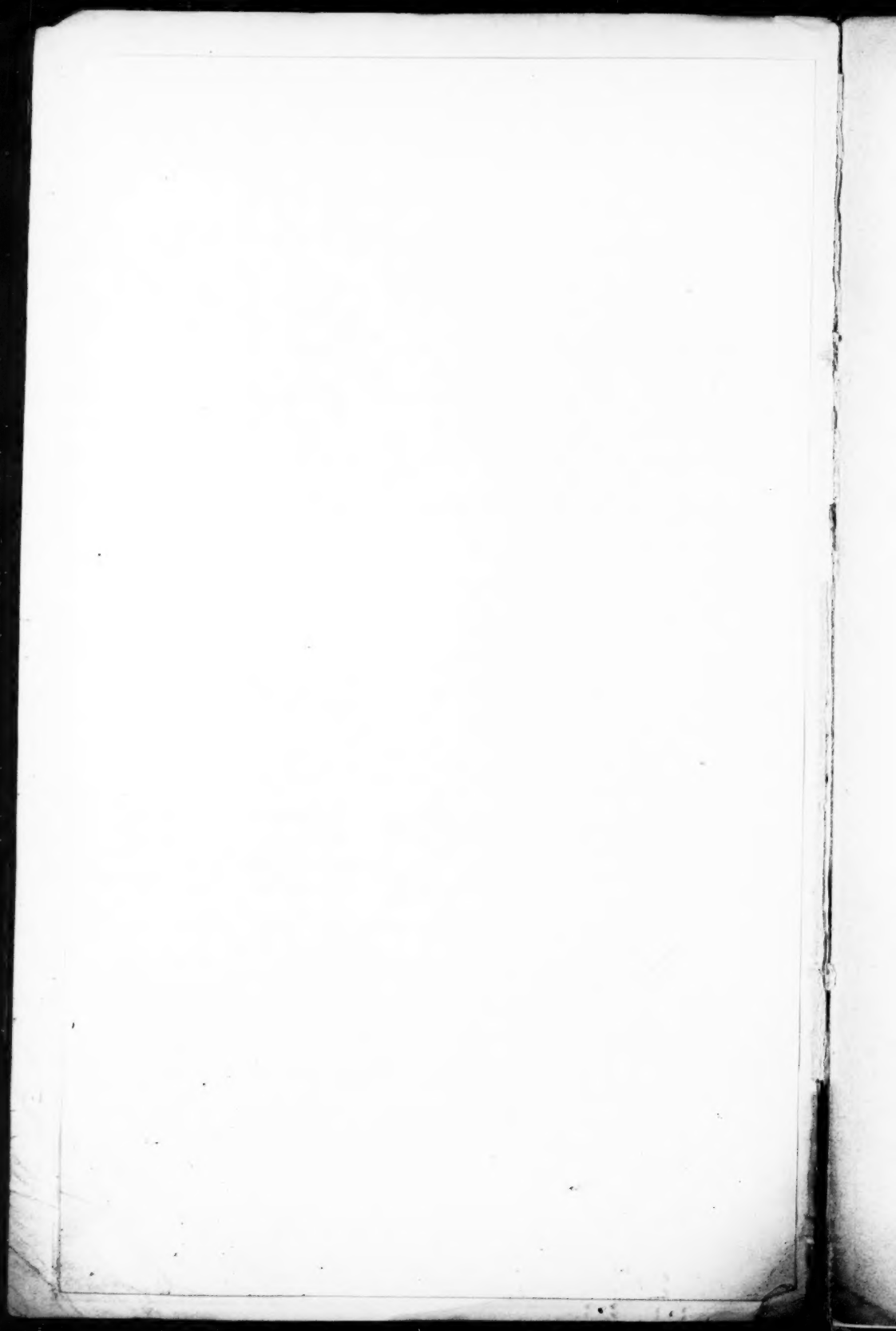
By Order,

GERALD R. MALTBY, LIEUT., R.N.,

WHITEHALL, S.W., LONDON,

Secretary.

December, 1896.



Telegraphic Address—

"RUSSATUS, LONDON."

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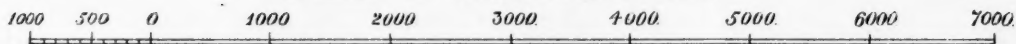
HIS MAJESTY WILLIAM II.,
German Emperor and King of Prussia, K.G.
Colonel-in-Chief 1st (Royal) Dragoons.

1000
E

ERRATA in November Journal.

For Scale on Map of Bay of Gibraltar substitute

SCALE OF YARDS, $RF \frac{1}{50\,200}$.



Page 1385, third line, *for* "8·631 kilogrammes," *read* "0·631 kilogrammes."

Page 1403, twenty-seventh line, *for* "millimetres," *read* "metres."

THE JOURNAL

OF THE

ROYAL UNITED SERVICE INSTITUTION.

VOL. XL.

DECEMBER, 1896.

No. 226.

[Authors alone are responsible for the contents of their respective Papers.]

HIS MAJESTY WILLIAM II., GERMAN EMPEROR
AND KING OF PRUSSIA, K.G., &c.
COLONEL-IN-CHIEF OF THE 1ST (ROYAL) DRAGOONS.

HIS MAJESTY WILLIAM THE SECOND is the eldest son of His Late Majesty Frederick III., German Emperor and King of Prussia, by his marriage with Victoria Adelaide Maria Louisa, Princess Royal of Great Britain and Ireland, eldest daughter of Her Majesty Queen Victoria.

Prince William was born at Berlin on the 27th January, 1859; and on the 27th January, 1869, was, at the age of ten, appointed Second Lieutenant in the 1st Prussian Regiment of Foot Guards. On the 11th September, of the same year, he was appointed *à la suite** of the Grenadier Regiment King Frederick William IV. (1st Pomeranian), No. 2; and on the 1st January, 1873, *à la suite* of the 2nd Guard Landwehr Regiment.

On the 22nd March, 1876, His Royal Highness attained the rank of First Lieutenant; and on 7th February, 1877, was appointed to do duty with the 1st Prussian Regiment of Foot Guards, which he joined two days later. On the 22nd March, 1880, he was promoted to the rank of Captain; and on the 7th August, 1880, to that of Company Chief.

* The phrase "*à la suite*" corresponds to a certain extent to the English word "supernumerary." The officers to whom the phrase is applied are borne in italics in the list of officers of the regiment, but receive no pay or allowances.

On the 16th September, 1881, the Prince attained the rank of Major, and was appointed *à la suite* of the 1st Prussian Regiment of Foot Guards. He was at the same time attached for duty for one year from the 1st October to the Guard Hussar Regiment. On the 22nd May, 1882, he was appointed *à la suite* of the Guard Hussar Regiment; and when his period of twelve months' duty with that corps expired on the 1st October, 1882, the term was extended for an additional six months. On the 30th March, 1883, he received orders to continue doing duty with the Guard Hussar Regiment until the 30th June; and on the day following joined the 1st Guard Field Artillery Regiment for a three months' tour of duty.

On the 27th September, 1883, His Royal Highness joined the 1st Prussian Foot Guards, and took over the command of the 1st Battalion of the regiment. For two years he maintained this appointment, until, on the 8th September, 1885, he was relieved from duty, and handed over the command of the battalion.

From the 16th September, 1885, the Prince remained *à la suite* of the 1st Prussian Regiment of Foot Guards, of the Grenadier Regiment King Frederick William IV. (1st Pomeranian), No. 2, and of the 2nd Guard Landwehr Regiment; was promoted to the rank of Colonel; and appointed Commander of the Guard Hussar Regiment. On the 3rd June, 1887, he was nominated *à la suite* of the Marine Infantry Battalion, and on 27th January, 1888, *à la suite* of the Guard Hussar Regiment. On the same date he was promoted to the rank of Major-General, and to the command of the 2nd Guard Infantry Brigade; was appointed Second Colonel of the 2nd Guard Landwehr Regiment, and to be *à la suite* of the 1st Prussian Regiment of Foot Guards, of the Grenadier Regiment King Frederick William IV. (1st Pomeranian), No. 2, and of the Marine Infantry Battalion.

In consequence of the death of His Majesty the Emperor William on the 9th March, 1888, Prince William became Crown Prince of the German Empire and Crown Prince of Prussia, and Imperial and Royal Highness. And when the Emperor Frederick III. died on the 15th of June following, the Prussian Crown and the Imperial Dignity passed to His Majesty William II.

On the 15th June, 1888, His Majesty announced himself Colonel of the 1st Prussian Regiment of Foot Guards and the Regiment of the Gardes du Corps; and on the 19th June, 1888, Colonel of the Body Guard Hussar Regiment. His Majesty continued *à la suite* of the Grenadier Regiment King Frederick William IV. (1st Pomeranian), No. 2, and with the 2nd Guard Landwehr Regiment as Colonel-in-Chief.

On the 4th July, 1888, His Majesty ceased to be *à la suite* of the Marine Infantry Battalion. On the 1st September, 1888, he became Colonel-in-Chief of the 1st Guard Field Artillery Regiment; on the 13th September, 1889, Colonel-in-Chief of the King's Lancer Regiment

(1st Hanoverian), No. 13; on the 12th September, 1891, Colonel-in-Chief of the Infantry Regiment Emperor William (2nd Grand Duke Hessian), No. 116; on the 4th September, 1893, Colonel-in-Chief of the King's Infantry Regiment, No. 145; and on the 13th September, 1893, Colonel-in-Chief of the 2nd Baden Grenadier Regiment (Emperor William I.), No. 110.

His Majesty, in addition to the above commissions, was appointed on the 18th May, 1884, Colonel-in-Chief of the Imperial Russian 85th Infantry Wyborg "His Imperial and Royal Majesty the German Emperor, King of Prussia William II. Regiment." On the 18th September, 1885, he was appointed Colonel-in-Chief (Oberst-Inhaber*) of the Imperial and Royal Austrian Hussar Regiment "William II., German Emperor and King of Prussia, No. 7"; and on the 9th April, 1888, Colonel-in-Chief of the Royal Saxon 2nd Grenadier Regiment, No. 101 "Emperor William, King of Prussia." On the 16th June, 1888, His Majesty became Colonel-in-Chief (Oberst-Inhaber) of the Imperial and Royal Austrian Infantry Regiment "William I., German Emperor and King of Prussia, No. 34"; and on the eighteenth of the same month Colonel-in-Chief of the Imperial Russian Body Guard, St. Petersburg "King Frederick William III. Regiment"; on the 19th June, 1888, he became Chief (Inhaber*) of the Royal Bavarian 1st Lancer Regiment "Emperor William II., King of Prussia"; on the 22nd June, 1888, Colonel-in-Chief of the Royal Wurtemberg Infantry Regiment "Emperor William, King of Prussia (2nd Wurtemberg), No. 120"; on the 30th August, 1888, Admiral of the Royal Swedish Navy; on the 18th October, 1888, Honorary Colonel (Ehren-Oberst) of the Royal Portuguese Cavalry Regiment, No. 4 "German Emperor, William II."; in 1890, Admiral of the Norwegian Navy; on the 11th September, 1895, General of Cavalry of the Imperial and Royal Austrian Army; and on the 25th January, 1896, Colonel-in-Chief (Inhaber) of the Royal Bavarian 6th Infantry Regiment "Emperor William, King of Prussia."

On the 1st August, 1889, His Majesty the German Emperor arrived in England escorted by a portion of the German Fleet, and on the following day was appointed by Her Majesty the Queen to the rank of Honorary Admiral of the Fleet in the British Navy, a distinction which had never before been conferred upon any but a British officer. In the uniform of the British Navy His Majesty inspected the British Fleet at Spithead on the 5th August, three days before his return to Germany. During his visit the Emperor conferred upon Her Majesty the appointment of Chief of the 1st Prussian Regiment of Dragoons of the Guard, and in compliment to the Queen it has since borne the title of "The Queen of England's Regiment."

* "Oberst-Inhaber" is practically the same as "Inhaber" or "Chef," and means Colonel-in-Chief. The German Emperor, for instance, is all three of the 1st (Royal) Dragoons. In the German Army List he would be called "Chef"; in conversation it would be correct to call him by any one of the three titles.

The office of Admiral of the Fleet is a very ancient one. From the earliest days of our Navy as an organised force down to the year 1672, the Lord High Admiral was the recognised commander-in-chief of the fleet. He was in fact, as well as in name, the Admiral of England. Sir Edward Howard off Brest in 1513, Lord Lisle at Spithead in 1545, Lord Howard of Effingham in 1588 and again in 1597; the Duke of Buckingham at Rhé in 1627, the Duke of York in 1665 and again in 1672, are among the most familiar instances of the Lord High Admiral in actual command. When the Admiral was unable to take the command himself, or when the expedition was not considered of sufficient importance, he appointed a commander-in-chief.

The Board of Admiralty, as such, dates from the Revolution, and from that time it was represented afloat by the Admiral and Commander-in-Chief of the Fleet, now known as the Admiral of the Fleet. Amongst those who have held the office may be mentioned the following famous Admirals:—Arthur Herbert, created Earl of Torrington; Sir George Rooke, who burnt the galleons at Vigo, took Gibraltar in 1704, and fought the battle of Malaga; Sir Cloudisley Shovell, who was lost off the Scilly Isles in 1707; Charles Mordaunt, Earl of Peterborough, subsequently distinguished as a soldier during the war of the Spanish Succession; Sir John Leake, who relieved Gibraltar in 1705; Sir George Byng, created Viscount Torrington for his victory over the Spanish at Cape Passaro in 1718; George, Lord Anson, famous for his voyage round the world; Edward, Lord Hawke, distinguished for his victories over the French in 1744 and 1747; Richard Earl Howe, who relieved Gibraltar in 1782, and won the famous victory over the French on the 1st June, 1794; John Jervis, created Earl St. Vincent for his defeat of the Spanish in 1797; and William, Duke of Clarence, afterwards William IV., King of England. The first appointment of "Honorary Admiral of the Fleet" was conferred upon His Royal Highness the Prince of Wales, on 18th July, 1887. The appointment of His Majesty the German Emperor is the second and only other one.

On the 5th May, 1894, the Queen was further pleased to confer upon His Majesty the appointment of Colonel-in-Chief of the 1st (Royal) Dragoons of Great Britain, one of the most distinguished regiments in Her Majesty's Service. The regiment traces its origin to certain troops of Horse or Cuirassiers, which fought against the Moors in Tangiers, from 1662 to 1684. On the return home of these troops they were formed into a regiment with two other troops, one of which was raised by Lord Cornbury, son of the famous Earl of Clarendon, and the other by Colonel John Churchill, afterwards the celebrated Duke of Marlborough. The regiment was styled the "King's Own Regiment of Royal Dragoons," a title which was shortly afterwards changed to that of "The Royal Dragoons." "The Royals," as the regiment is usually called, has since had a most distinguished career. In Ireland and in Flanders, at the end of the 17th century; in Holland, under the Duke of Marlborough in 1702-3, and in the Peninsula in 1706-10; again in

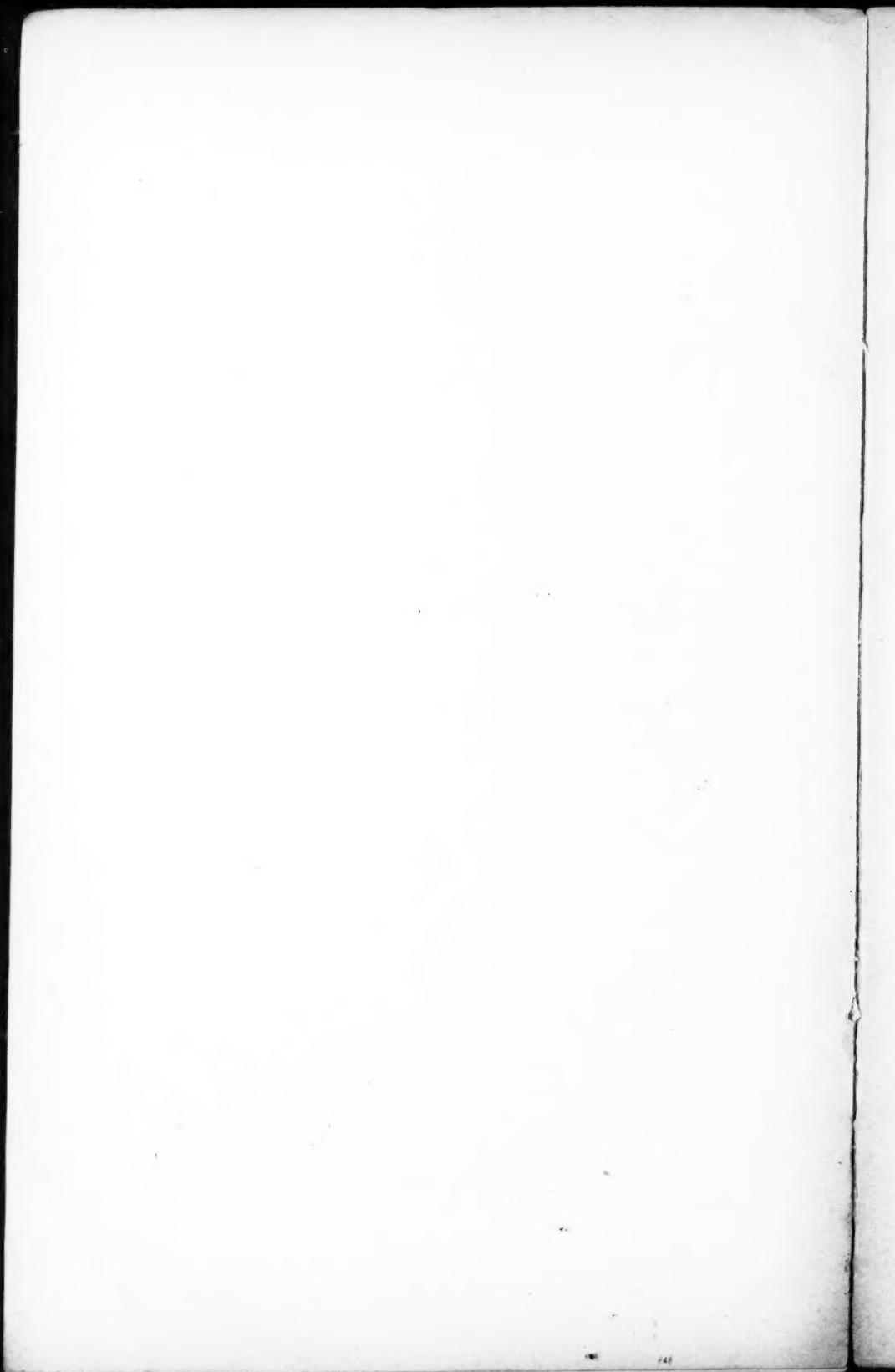
Flanders in 1742-45, including the battle of Dettingen, where it captured the white standard of the French Mousquetaires Noirs; at Fontenoy; in the Peninsula campaigns in 1809-14; and at Waterloo in 1815, where it distinguished itself by capturing the Eagle and the flag of the French 105th Regiment of the Line. In later years the regiment served in the Crimean War of 1854-56, where it took part in the famous charge of the Heavy Brigade at Balaclava.*

The German Emperor has closely identified himself with the British Royal Dragoons. A deputation of the regiment, consisting of Lieut.-Colonel H. Tomkinson, Captain F. Y. McMahon, and Lieutenant H.S.H. Prince Francis of Teck, reported themselves to His Majesty at Berlin on the 5th June, 1894, and remained there until the 14th of the month. On Lieut.-General F. Marshall, C.M.G., colonel of the regiment, His Majesty has conferred the Order of the Crown of the First Class; and on Colonel H. Tomkinson, lately commanding the regiment, the Order of the Crown of the Second Class; while to the regiment the Emperor presented a full-length portrait of himself in the uniform of "The Royals." On the 18th June, 1895, the anniversary of Waterloo, Count Hermann Hatzfeldt, on behalf of His Majesty, placed a laurel wreath on the guidon of the regiment at Dublin; and on the same day this year His Majesty sent a laurel wreath which was attached to the guidon of the regiment at the Curragh, by Baron von Eckardstein, Military Attaché to the German Embassy in London.

The portrait which accompanies this memoir is from a photograph, in the uniform of "The Royals," which His Majesty was graciously pleased to present for reproduction in this JOURNAL.

R. HOLDEN.

* It may not be generally known that carefully preserved in the Zeughaus, in Berlin, is a uniform of an officer of the British Royal Dragoons of the period of 1784.



THE FUNCTIONS OF THE NAVY AND ARMY IN THE DEFENCE OF THE EMPIRE.

By Vice-Admiral P. H. COLOMB.

Friday, June 5th, 1896.

The Right Hon. The EARL COWPER, K.G., in the Chair.

INTRODUCTORY.

I AM desirous of opening a fuller and more comprehensive discussion on the functions of the Navy and Army in the defence of the Empire than has yet taken place. I have the greatest confidence in the value of these discussions, and, rightly or wrongly, I am convinced that we do not yet fully understand what our relative functions are, and that as a consequence the Army labours under disabilities, and encounters difficulties, many of which would disappear, and many would be mitigated, were a more complete understanding arrived at.

I can, in a few words, sum up the conclusions I desire to establish, and by which I believe the Army would be greatly benefited.

I believe we make a mistake in not more closely associating the ideas of naval and of military defence in conjunction. That we have too much belief in, and lay too much stress upon, the defence of the Empire as a group of isolated and disconnected positions, and attach too little value to the idea of mobile forces, naval or military, or both, connecting up the positions, and throwing their whole strength into the defence of the position or positions which are at any time most seriously threatened.

I think that the Navy has escaped the drag upon its mobility, which such erroneous ideas would have attached to it, and, indeed, not so long ago did attend it; but that the Army—meaning thereby all manners of land defences—has not escaped it, and that all through the Empire, but most seriously in the United Kingdom, the drag of an immobile and isolated system of defence, keeps the Army down, and makes insignificant that which could be, and ought to be, a Service for the nations of the earth to take pattern by, as they now take pattern by the British Navy.

I can put my case in a nutshell by adverting to an Army Return. No. 107, of the 13th of March last.

I there find that the charge for the effective field army in the United Kingdom is set down at £5,081,100; while the effective charge for

garrisons, defensive positions at home, and troops held in reserve is no less than £3,677,500. I do not require to examine closely or to criticise the figures. I can only take it that nearly four-ninths of the total charge is for immobile troops: troops which are not intended to operate beyond the United Kingdom. I must assume that if the whole of the Army Estimates were thus brought to account, some such proportions between charges for mobile and immobile forces would be disclosed throughout. Then, I understand—subject to correction, of course—that the troops maintained by the five million charge are not in fact mobile and ready for immediate service in parts of the Empire outside the United Kingdom; that in reality a comparatively small portion only are in this condition.¹

My conviction is, and it is the main point I offer for discussion, that inside the United Kingdom to the greatest extent, and all through the Empire to a smaller extent, the proportionate expenditure on immobile defences is much too great; and that the Empire is not safe with only so small a military force, ready to embark at short notice.

I believe that on this last point I shall carry the suffrages of a large body of military men. Debate will arise when I express my conviction that, owing to the defending action of the Navy, expenditure in localised and fixed military defences, where there are no land frontiers, can be largely reduced with perfect safety; and that, if this is done, we can have a mobile military force sufficient for our Imperial needs without any great increase of cost.

The subject of the functions of the Navy and Army in defence is an extremely simple one in principle; but it is so overlaid in our conception by cross issues, that no paper of ordinary length can do more than touch on a few of the chief points. I shall not be dissatisfied if I get so far as to make it clear what the points are that we ought to discuss.

But I plead that, in thinking of what is probable or improbable in attack and defence, we should admit no statements except such as are founded on experience. The matter is far too serious to allow us to act on hypotheses of which we have either no experience, or which experience contradicts.

I am bound to declare against that frame of mind which allows us to throw over experience *prima facie*, because locomotion and weapons have altered. I claim that before we discard experience, and allow hypotheses

¹ The figures of the return are:—"For field army consisting of three army corps and four cavalry brigades—Number, 112,098. Effective charges, £5,081,100. Non-effective charges, £1,236,500. Total, £6,317,600.

"For garrisons and defensive positions at home—Number, 333,723. Effective charges, £3,070,900. Non-effective charges, £532,100. Total, £3,603,000. (But this includes £240,500 effective and £16,500 non-effective charges for 26,000 men of the Army Reserve.)

"Troops held in reserve—Number, 53,335. Effective charges, £606,600. Non-effective charges, £96,200. Total, £702,800.

"Depôts, recruiting establishments, etc.—Number, 7,932. Effective charges, £687,300. Non-effective charges, £209,600. Total, £896,900.

"Recruits with less than one year's service—Number, 28,600. Effective charges, £1,372,580. Non-effective charges, £224,400. Total, £1,596,980."

to reign, we must show that the alterations are such as to falsify the teachings of experience.

INDEPENDENT ACTION OF THE NAVY AND ARMY IN THE PAST.

It might be asked why it is necessary to formally discuss the defensive functions of the Navy and the Army in our day, seeing that experience has shown that we got on very well without any such discussions in the past, and that we had a Navy and an Army which have been for many generations the wonder and envy of the world.

But it is history which compels us to ask for these discussions. It tells us, indeed, that we were never without them.¹ It tells us that we have long had a Navy the greatest ever known; and an Army always insignificant at the point of contact with the enemy. The Navy has done its work in a state of great numerical superiority; the Army, almost always in numerical inferiority. It has only succeeded by its astonishing moral character leavening allied forces and permeating native races. The British Navy has almost always fought alone in magnificent strength; the Army almost always as an ally, converting numerical inferiority into actual superiority by the grandeur of its steadiness, its pluck, and its perseverance.²

Military men justly advert to these failures of the Army to appear in numerical strength on the field of battle; but their complaints leave it open to be supposed that the country has been niggardly towards it as compared with its generosity towards the Navy. It is the other way. The higher votes of men and money have been generally, if not always, to the land forces. But the men and the money voted for the Navy have always become Navy; while the men and the money voted for the Army have rarely become Army in the face of the enemy.³

¹ See various pamphlets in the Library, R.U.S.I., especially "A Short Essay on the Modes of Defence best adapted to the Situation and Circumstances of this Island." By an Officer. London, 1785.

² "For be it remembered that, from the days of Agincourt to the present time, we have never fought on the Continent without allies—*i.e.*, our military strength has never sufficed for the duties that our position in Europe has imposed upon it. Where should we have been in the Peninsula without our German and Portuguese troops? Do we at all appreciate the fact that at Waterloo we had only 22,000 British troops out of the 67,000 on the field in the Anglo-Belgian-German Army, commanded by Wellington? . . .

"Had we possessed an adequate Army the career of Napoleon might have been brought to an end in 1807. . . .

"Let me give one more example of what the want of proper military organisation has cost us. I refer to the American War of Independence. It began in April, 1775. . . . Now, until 1778, when France turned against us . . . had we possessed any adequate military organisation we could have put 50,000 men in the field, which would have settled the question."—CAPTAIN JAMES.

³ 1807.—Army and Ordnance Estimates, £18,829,930. Navy Estimates, £10,920,000. Numbers voted:—Army, 113,795; Navy, 120,000. 1809.—Army and Ordnance Estimates, £22,728,368. Numbers voted, 368,309. 1810.—Expenditure. Army and Ordnance, £26,655,486; Navy, £20,058,412. Numbers voted, Navy, 130,000. 1815.—Army and Ordnance Estimates, Army, £48,300,908; Navy, £21,961,566.

Thus the independent action which the Navy and the Army may seem to have taken in the past, while it has not hurt the Navy at all, has fostered in the Army a running sore, exhausting its strength and depleting it.

Is it always to be like this? Are we to assume without examination that no amount of considering the joint functions of the Navy and Army in defence will remove any of the clog from the foot of the Army, and enable it to show itself easily and quickly in full strength at any required point? I am convinced of the contrary.

TWO SCHOOLS OF DEFENCE.

There are generally two schools of defence contending, which may be called the *instinctive* and the *reasoned*. The instinctive school goes not beyond the first blush in its ideas. "Here is a position which it is possible the enemy may attack; let us proceed to defend it without reference to anything else."

This school built the great wall of China; the Chinese sea-faced batteries which the barbarian was so unkind as to enter by the back way. It inspired Vauban, and studded the low countries with those fortified towns, which passed from hand to hand in the due course of war. All over Germany it fortified cities which are now thrown open, and localised defensive forces now merged in the general defence. It walled in Paris, and shut up a great army in Metz. It has not now lost its influence on the French side of the Franco-German frontier. It sunk immense sums in fortifying Portsmouth and Plymouth,¹ and it pines for the time when it may build a wall round London. It resolutely closes its eyes to what has gone on and must go on in war outside the British Islands, and will stop short at no expenditure which predicates a field of battle within them.

The reasoned school declines to stop short at any locality. It insists on always looking at defence as a whole. It is clear that any force distributed in isolated positions, however nominally impregnable each position may be, must suffer defeat at the hands of an equal force which throws its whole power upon each position in succession. It reasons thus, and looking back to history it learns that it always has been so as a matter of experience.

Hence its principle is, not to prepare to meet attacks on positions when made, but to prevent the enemy from contemplating such attacks. Its aim is to convince him that he will not have time to complete an attack on any locality before the general defending force is upon him. It designs to produce, in the mind of the enemy, the conviction that if he cannot subdue by his concentrated mobile force, the concentrated mobile force of his opponent, he can make no attacks at all, but such as are in the nature of surprises, and, therefore, on a very small scale.

It results from all this that the main difference between the two schools is that the instinctive school does not, and the reasoned school does, take

¹ Expenditure proposed by Royal Commission, 1860, £11,850,000.

time into account. The instinctive school can only go on increasing the strength of its local works, garrisons, coast-defence ships and appliances, and so on, without giving any thought to the time for which they can hold out if attacked, because it is all the same to the scheme of defence whether it is long or short.

But to the reasoned defence, time is everything. The mobile force is necessarily concentrated and ready to act. Its one object is contact with the enemy, and if topographical, hydrographical, or other irremovable conditions, fix its normal position, its defensive powers reside in its time-distance from points at which the enemy may strike.

But this time-question reminds the reasoned school that over and above local defences set up to guard against surprises by very small forces, there is something else in that way to be thought of. If the mobile defending force is far from any position which the enemy might reasonably desire to possess, plunder, or destroy, and he is near to it, then there must be local defence equivalent to the difference in time between the march or voyage of the enemy, and the march or voyage of the mobile defending force. The local defence must interpose a compensating delay.¹

¹ Historical illustration must generally be negative as to the success of a reasoned system of naval and military defence, because when it is complete no attacks will be made. But the more modern history of the United Kingdom is the prevention of invasion by the action of the fleet, culminating in such operations as *Hawke's* and *Boscawen's* battles.

Practically it must be allowed that the shore is never attacked when it is within the defending scope of the dominant fleet. Generally speaking, it is seldom attacked within the scope of an equal or even of a somewhat inferior fleet.

The best instance of the defensive power of the Navy and the Army in combination is also the most modern, the battle of Lissa. The Austrian Fleet believed itself so inferior to the Italian, that it remained in port and left the Italian Fleet in full command of the Adriatic. The Italians were so convinced of their own superiority that they did not even set a watch on the Austrian Fleet. They determined to attack the Island of Lissa. But Lissa was so garrisoned and fortified as to be able to resist for more than two days. Fasano Roadstead where the Austrian Fleet lay was but twenty hours' sail from Lissa. The Italians had been bombarding the works of Lissa for two days, and were actually putting their troops into the boats to invade, when the Austrian Fleet appeared, and taking advantage of their unprepared condition, entirely defeated the Italian Fleet, and saved Lissa.

Instances of the failure of the system of conjoint defence, from the failure of the garrison to hold out for the required time, are not now unfamiliar; and they show the incapability of isolated defences, side by side with the security to be gained by any system of immobile defence designed to do no more than cause delay pending the arrival of the defending fleet.

In 1782, Suffren, the French admiral, was allowed to mass an invading flotilla in the Harbour of Batticaloa, only twelve hours' sail from the British port of Trincomalee. At the same time the mobile defending fleet under Hughes was fourteen days' sail from Trincomalee, at Madras. According to principle, Trincomalee, in the hands of the Army, ought to have been able to hold out for a fortnight, and if Suffren had believed it capable of doing so, it is unlikely that he would have attacked. But it was not capable of holding out for four days, and Suffren calculated on an ample margin of time. He made his attack and carried

Mere nearness of the enemy to an attackable position does not necessitate its local defence, if the defending mobile force is equally near. The only point to secure is that the enemy shall not be allowed to believe he can succeed in completing any open conquest before the arrival of the defending mobile force.

The general result evidently is that the instinctive school is not really a school of defence, but only of delay. It leaves attack open and only proposes to meet it when it comes. If the attacking force perseveres in the effort, every position defended by the instinctive school falls in succession. It can never do more than delay their fall.

But the reasoned school defies attack except upon its general mobile defending force. If the enemy is not strong enough to attack that, he is confined to operations which he may hope will escape notice.

It is possible to make answer to these propositions by declaring that though the defence is confined to isolated localities, each may be made so nearly impregnable that the mobile and concentrated enemy will, in fact, be wearied and wasted, long before he comes to the end of his successive efforts.

The rejoinder clearly is that unless each nearly impregnable locality is self-sustaining and self-supporting, the mobile enemy need not attack at

Trincomalee within the four days, yet the operation was very near being a failure because the action of the defending fleet was so much more prompt than had been anticipated. Hughes appeared only forty-eight hours after Trincomalee surrendered.

In June, 1779, the French Admiral d'Estaing was at St. Vincent, three days' sail from Grenada, with a fleet and an invading flotilla. The British defending fleet was then five days' sail from the same island. D'Estaing, knowing that there was no predominant fleet, as his own was equal to that of Byron, calculated that the two or three days' margin would enable him to capture the Island of Grenada before Byron's fleet could arrive there. Grenada—or rather the citadel of Grenada—was not capable of holding out for twelve hours, and it surrendered to d'Estaing five days after he quitted St. Vincent. The British relieving fleet arrived two days after the surrender.

In May, 1781, a French fleet was raised to attack the Island of Tobago, from which it was fourteen days distant. The British fleet, somewhat inferior to the French, was then twenty-six days distant from that island. Tobago, under the conditions of a joint system of defence, should have been able to hold out for twelve days at least. But its citadel was not able to hold out a week, and it had been two days in the hands of the French when Rodney's relieving fleet arrived.

But if, in these cases, the Army failed to do its part, quite possibly because that part was not understood, the Navy was also a failure. To perfect the system, the British fleets should have been predominant, and they were not. The fleet of Hughes in 1782, and of Byron in 1779, on finding the British possessions in the hands of the enemy, each fought drawn battles with him. Rodney, at Tobago, did not think himself strong enough to fight at all.

There is, perhaps, only one clear instance of the failure of a sufficient relieving fleet, when, in the joint system of defence, the Army did not fail. This is the case of the unfortunate Byng, who did not understand that he was sent to throw himself on the French fleet, whatever his chances of winning or losing might have been, as he owed it to the sister-service in their joint scheme of defence.

all—he simply invests; occupies the routes between the nearly impregnable positions, and waits till they drop into his hand like over-ripe fruit. In any case the reasoned school recognises that no series of isolated but intact positions can constitute a Government or a nation, if the enemy lies round, or between them.¹

There is another marked difference between the two schools of defence. The instinctive school will not examine probabilities of attack. It always proposes to act and to spend on possibilities.

The reasoned school is compelled to think of war as a speculative business, where the careful and reasoning, and yet daring, operator will succeed, and the rash and thoughtless operator will fail. The enemy, it reasons, will either confine himself to attacks which not only have prospects of success, but where the prospective gain greatly exceeds the prospective risk; or else he will make attacks where success is uncertain, and where the prospective gain is not commensurate with the prospective risk.

The instinctive school never goes as far as this. It simply urges preparation to repel all possible attacks, without going into the question of whether they are probable, or whether the enemy will gain or lose by them.

The reasoned school puts itself as far as it can into the enemy's mind; the instinctive school will not concern itself at all about the enemy's mind.

The reasoned school reflects that all attacks by the enemy must have one of three objects:—Conquest and occupation; plunder; or destruction.

Conquest and occupation may be a mere extension of territory—be it land or water—already held, but then it demands free and secure communications as it advances.

It may be effected by a flying column, without communications, crossing hostile territory and securing itself in its new acquisition. But then this new territory must be self-sustaining and self-supporting. It is certain loss for a flying column to project itself on to a territory which

¹ No more perfect examples of the way in which the two schools of defence reason can be found than in the Reports of the Royal Commissions on Defence of 1789 and 1859.

In the first, the whole question is made to rest on the force likely to be assembled by the enemy for attacking Portsmouth or Plymouth, and a question of whether the defending mobile fleet could be absent for thirty days. The decision was that it could not be out of touch with any possibly attacking force, and no money was voted for the immobile defence.

In the second report, no estimate of the force likely to assemble for the attack was made, and no time was mentioned within which it might succeed in its attack. It was assumed that there would be either no defending fleet at all, or else that this fleet might find it necessary to protect our commerce in the chops of the Channel while the enemy was attacking Plymouth. It was recommended to spend £11,000,000 on fixed defensive works, a sum, the interest of which at 3 per cent. would, according to the Army Estimates this year, have sufficed to keep on foot a mobile military force of 5,000 men.

will not render it self-sustaining and self-supporting, and where the attacked force will immediately surround it and cut it off.

The reasoned school reflects that such attacks by the enemy are not really to be discouraged. Their certain failures will shorten the war; but it concludes that a reasonable enemy will not make them at all.

Attacks for the purpose of plunder or destruction presuppose free passage between base and objective, to and fro, for the time necessary to complete the operation. This time, the reasoned school will not allow, but it really does not object to the enemy making attempts, as every failure tends to shorten the war.

PRINCIPLES OF THE SCHOOLS OF DEFENCE APPLIED TO THE CASE OF THE EMPIRE.

The British Empire consists of a number of positions, great and small, naturally isolated from one another by great or little bands of sea.

Every part of its territory has sea frontiers liable to be isolated by the aid of an enemy's Navy, if artificial steps of some kind are not taken to prevent it.

Some of the most important parts of it have great land frontiers, which are open to invasion by the enemy's Army if no steps are taken to prevent his attack.

In some way or other the Navy is concerned, either alone or with the Army, in defence of the sea frontiers of the different Imperial territories. Directly, the Army alone is concerned in the defence of the great land frontiers. The Navy alone is concerned in preserving the sea communications.

No one attempts to deny that it is impossible to apply the principles of the instinctive school of defence, pure and simple, to such an Empire. The most sturdy supporter of isolated defences relies tacitly or overtly, on defence by mobile forces, naval and military, theoretically ready, and chiefly accumulated in and about the British Islands.

No one proposes that our great land frontiers in Asia, America, and Africa can be preserved inviolate by immobile and localised defences, whether of men or material. All admit that in the end the defence falls upon the mobile army stored up for use in the United Kingdom. But all are not prepared to admit, because all do not think of it, that the action of the mobile army is preventive more than repellent. The enemy will not attack the land frontiers, because he does not believe he can succeed against them, prior to the arrival of the mobile defending force.

This purely military defence is therefore based upon the reasoned school. No one dreams of saying that the mobile army at home is the first line of defence for the land frontiers of India, or Canada. All would recoil in surprise from a claim that these frontiers should be locally strengthened and garrisoned in order to free the mobile army to go elsewhere.

To the sea frontiers of all positions in our Empire the tenets of the reasoned school can apply, as well as those of the instinctive school, and it may be averred that they contend for the mastery. It is conceivable to make every part of the Imperial lands which can be reached by sea locally impregnable—ready to repel any attack which can be made upon them. It is equally conceivable so to employ a great mobile force as ready to sweep down and destroy an attacking enemy long before he can complete his object of conquest, of plunder, or of destruction, that a reflecting enemy will not make the attempt at all.

In arranging the defence, then, by the Army, which can only operate on land, and by the Navy, which can only operate by sea, we must adopt the one school or the other. If we try to adopt both, we shall find that every port, shore, or island in the Empire is, and is not, depending for its defence on our mobile force. If the prospective action of the mobile force is sufficient to deter the enemy from thinking of attack, then the money spent on the immobile defence is wasted. If the action of the mobile force is not sufficient to prevent attack, then the money which ought to have been spent on the mobile force has been misapplied to local defence which is incomplete, because it admits of the prospect of successful attack.

It will be understood that, logically, the defensive error will be the same, whether the money be spent on naval or on military local defences.

If the place depends upon what are called coast-defence ships, which are either not required because of the deterrent action of the mobile naval force, or are insufficient in the absence of such action; the mistake in expenditure is just as great as if the expenditure went on fortifications, submarine mines, and immobile garrisons. It is not a question between Navy and Army; it is a question between two systems of defence.

Without doubt we are applying, by means of the Navy, the reasoned system of defence to every part of our Imperial territory which is washed by the sea.

At any moment we have a great mobile naval force distributed all over the world in squadrons of ships, groups of ships, or individual ships. There is always a great naval force ready in and about the United Kingdom immediately, or at a few days' notice. There is a great force always in the Mediterranean; lesser naval forces in Chinese, Indian, African, Australian, and American waters.

We have experience of alarms of war in our own time, and we know, therefore, what the course of the Navy will be in the earlier stages.

On the very first hint of strained relations, the ships of our Navy all over the world proceed to "shadow," as far as possible with an equal or superior force, the war-ships of the possible enemy. This shadowing takes place almost exclusively in neutral ports. We cannot immediately proceed to watch the enemy in his own ports. Such acts are subsequent to the declaration of war, or constitute an act of war if the prospective belligerent chooses to take it so.

If there are none of the possible enemy's war-ships within the limits of an Admiral's station, he will unquestionably concentrate his ships

at some central and convenient rendezvous, and remain there at first in an expectant attitude. In any case, he will concentrate all the ships not engaged in shadowing. Such shadowing is, of course, preventive of any attack by the ships shadowed, until they have shaken off or defeated the shadowing ships. The shaken-off ships can then only concentrate at the rendezvous.

We may assume the concentrations at Malta, Hong-Kong, Bombay, Simon's Bay, Bermuda, the Falkland Islands, Victoria in British Columbia, and Sydney, New South Wales. The first attitude is that of mobile force expectant and ready to strike. Of that attitude, and of the power to strike, the enemy will be fully cognisant; but the point is that, whether Imperial localities recognise it or not, the reasoned system of defence is so far adopted, and the concentrated naval forces, ready to strike in their own districts, are held to be deterrent upon the enemy's projects of attack. To be reasonably assured of success he must be prepared to fight and beat that group of ships which threaten him in any proposed operation; or he must be assured of a good margin of time in which to complete the operation before the ships can strike at him; or he must confine himself to acting on a small scale by surprise.

No doubt the war may begin by some attempted stroke on the part of the enemy by sea. If he defeats the naval force, he will isolate the Imperial positions in these waters, and prey upon the shipping. It does not follow that he will attack any land, but he may. He has still to think of time as well as means; whether he can complete and hold a conquest, or carry off his plunder, or finish his destruction and return to his ports, before the reinforced mobile squadron turns the tables on him.

If the enemy does not defeat the concentrated British force, or does not at once proceed to some overt act, he must be expected to seek the security of his own ports, and the next movement of the defending mobile squadron is to put itself in touch with him there, and watch him.

All neighbouring Imperial ports and shores, as well as all neighbouring sea-traders, are greatly relieved by this second attitude of the defending mobile naval force. It may be allowed, as experience proves it, that the watch will be more or less imperfect. But the case is twice as bad for an enemy proposing to attack a locality as it was before. He may now be fought directly he puts to sea, but he is not relieved from the danger of being followed up and fought before he has had time to complete his conquest, or plundering, or destruction.

Of course, if this second attitude of what is commonly called blockade, but which really is merely watching the enemy, is taken up, there will be all over the Empire a redistribution of the naval force. It will then be obvious that the real defence will consist in completing and perfecting the watch upon the enemy, until it is so complete and perfect that he dare not move out of port. Then, if all the threatened land-frontiers have been so strengthened or guarded by the mobile military force, that the enemy's troops dare not advance to the attack, the defence of the Empire is complete.

But while we recognise that the Army alone can guard the land

frontiers of our different territories, we cannot allow it to be supposed that the Army does not share in the defence of their sea frontiers.

In every port, island, or shore, open to the enemy's attack, the Army must be able to warn him that he will be kept at bay until the defending naval force arrives. How the Army can best do this is a separate question, to be more or less separately treated for each locality. The point to be understood is, that such a locality is really powerless to defend itself if the enemy attacks. His attack predicates success after a time, and the Army can do no more than postpone that time. The probable time being postponed till the relieving fleet arrives, the enemy does not attack at all, because he has no hopes of accomplishing his design within the time allowed.

In two other ways, the mobile Army comes in as a part of any reasoned system of defence. All positions are not equally liable to attack; it is impossible to say that in the course of war, some positions will not naturally become less, and others naturally more, open to attack than they were at first. The Army, being immobile, will be wanted at the first positions, and wanting at the last. Being mobile, it is transferred from the points where it is not wanted to delay surrender, to points where it is wanted.

Again, it has been pointed out that it is no use the enemy achieving a conquest which the conquering force will have to presently surrender. The mobile Army, ready to proceed to the re-capture of any territories captured by the enemy, puts the idea of conquest out of the enemy's mind. Even if he had time to complete the conquest, he will not attempt it because he knows he cannot hold it. Unless there is time to plunder and return, or to destroy and return, no attack will be made.

Originally the question is one of garrison; and it follows generally that the nearer any locality lies to the place of concentration of the naval force, the smaller need the garrison be, because the less time will the enemy be allowed before the defending ships are upon him. Hence the size of the garrison for defence is determined by the nearness of the enemy's port to the place to be garrisoned, the amount of the military force and transport there usually assembled, and the distance of the headquarters of the defending ships. The distribution is a matter of plain common sense; but if the so-called blockade is complete, garrisons are no longer called on to defend at all.

It will be understood that if the enemy's flotilla breaks blockade, the defending fleet follows it if its destination is known; if not, it falls back to the appointed rendezvous, resuming the expectant attitude, and ready to strike as soon as intelligence reaches it.

SOME FALLACIOUS PHRASES—"THE NAVY IS OUR FIRST LINE OF DEFENCE."

I have long found it very difficult to understand what anyone using the term "first line of defence," as applied to the Navy, can possibly mean by it.

The position of the Navy in any system of Imperial defence cannot

justify the term. We have seen that the position of the Navy is at present *inside the Empire*; and its action is either upon that part of our frontier which is formed by the enemy's coast-line, or else the ships are waiting at points of rendezvous within the Empire, to strike at the enemy when he contemplates attack. Any primary theory of defence must admit that the enemy is as likely to strike directly at a garrison as it is at a squadron. If the squadron is in the first line of defence, so is the garrison. It is impossible to say that the squadron must be struck first, and the garrison second.¹

If the Navy is the first line of defence, it must be understood that the Army is the second. But on the land frontiers the Army alone can defend, and, therefore, is the only line of defence.

The use of the phrase has probably arisen from a conception of the defensive position of the British Islands alone, apart from the rest of the Empire. It is possible to conceive of the United Kingdom as defended by a chain of ships surrounding it, which must be broken through before the shore is approached. In a vague sort of way this idea may have been extended to all other parts of the Empire, as a conception that the enemy is in possession of the sea, and must break through a chain of guarding-ships between him and the shore before he can reach the latter. But this, we see, is an absurd conception; the Navy could not act in this way. Yet the phrase is not only fallacious, it is mischievous. It prevents people from understanding that it is Navy and Army *together* that form the defence. It leads them to imagine that the point to be looked for is the naval collapse; and that in some way or other the Army, or land defences of some sort, can then be made a substitute for the Navy. The result, of course, is a general belief in the likelihood of failure on the part of this supposed outer line, and a desire for expenditure on this supposed inner one. This is so marked that we always see any strengthening of the Navy accompanied by a demand for strengthening what is supposed to be an inner line.

The point, of course, is that though the Army is concerned to a lesser degree than the Navy in the defence of Imperial shores, its share in the defence cannot be abandoned; and if that combined defence fails by the failure of the naval part of it, there is no substitute. There is nothing to prevent the enemy, with sufficient military force, from possessing himself of any part of the Empire which he may desire, because that part of it cannot receive help from the rest.

SOME FALLACIOUS PHRASES—"LIBERATION OF FLEETS FOR ATTACK, THE TRUE DEFENCE."

This phrase, in common use in different forms, does not seem to me one whit less fallacious or mischievous than the other just treated of. Its

¹ How can we possibly call the Navy the "first line of defence" in any of the actions mentioned in the notes to pp. 1427 & 1428. In every case, at Trincomalee, at Grenada, at Tobago, at Lissa, and at Minorca, the Army was the first line of defence, first attacked, and in three cases, mastered, before the Navy appeared at all.

meaning may be difficult to fix exactly, but there is no doubt that it teaches that naval and military defence are different things, and that the latter can be substituted for the former. As I read it, it infers that we must expect fleets to be detained beside weakly garrisoned and fortified posts in order to defend them; while if they were strongly garrisoned and fortified, fleets would not be so detained. Moreover, it infers that an admiral could proceed to the attack of some point, leaving the enemy free to operate behind him. When it is said that attack is the true defence, the inference must be that fleets can attack territories, and can do so without communications; that naval war may be carried on by each side attacking their enemy's territories at the same time, when each side is in a position to fall on his enemy's flotilla and stop his attack.

I can hardly suppose it is inferred that, if intelligence reaches the defending Admiral of the vicinity of an enemy's fleet, equal or inferior to his own, in a position to enable him to strike it, his movements will be influenced by any ideas regarding fortifications or garrisons. If the fleet he has intelligence of is not beyond his powers to cope with, and he has not intelligence of any flotilla ready to sail for the attack of posts behind him, he will be bound, at his peril, to proceed to encounter the enemy's fleet. It would be hopeless for him to excuse himself by declaring that he believed places behind him were insufficiently fortified and garrisoned. So far as he could be aware, the fleet he had intelligence of was the one concerned with any attack, and to defeat it was the obvious method of putting attack out of its power.

But if the Admiral had intelligence that a flotilla was about to sail from any port or ports to attack positions that he had it in charge to defend, he must immediately get into touch with that flotilla in order to destroy it as soon as it puts to sea. The fact that such a flotilla had a reasonable prospect of success because of a known weakness of the land defences, is the thing of all others which would lead him away from his own coast and throw him on that of the enemy.¹

¹ It is difficult to imagine a phrase more absurdly contrary to the teaching of experience than this is.

Gibraltar, properly garrisoned, could not have fallen into our hands in 1704, except after long delay. It was then over-fortified and under-garrisoned, and that caused its rapid fall. Proportionately garrisoned and fortified, it is the most impregnable position in the world of its kind. It has always shown itself a drag upon the Navy. After it passed into our hands it long detained a fleet at Lisbon to watch over its safety, and that fleet several times relieved it.

In 1780, 1781, and 1782, it detained the fleet in European waters, which would have been quite capable of saving the American Colonies, and which would, undoubtedly, have done so, had it not been for its existence as the most strongly locally defended port which had ever been heard of.

Minorca was accounted only one degree less locally strong than Gibraltar. It always fell when attacked "in the absence of the fleet." Byng was shot, because, in a sense, he allowed himself to be "freed."

Lord St. Vincent objected to the retention of Minorca, knowing it to be almost the strongest place in the world, because it would be necessary to keep a fleet ready to defend it.

Only one thing could possibly justify his considering himself not free to assail the enemy either in fleet or flotilla, if he knew he could get at him, that is, his being himself in too inferior force.

If he did not know where the enemy—in fleet or flotilla—was, he could not move at all. But neither in this case, nor in any other where the Admiral was in sufficient force, would the question of weak or strong land defences concern his movements.

The mischievousness of the phrase lies in its fostering the idea that land defences and garrisons are a defence, apart from that of the mobile naval force. They cannot be so, because nothing but the mobile naval defending force can limit the strength of the attacking force. The users of the phrase are conscious of this instinctively, and recognise that it is impossible to put a limit on the expenditure upon the local and immobile defences, if such a phrase is adopted as a ground for expenditure.

THE EFFECT OF THE MODERN CHANGES IN THE MATERIAL OF WAR.

I have deprecated the habit we fall into of excluding past experience as our guide in preparation for defence, on the simple grounds that most of the material agencies of war have changed since then. I claim that, until we examine, we cannot tell in what way the changes affect us. We are at least quite as likely to find that in any given case the lessons of experience are strengthened, as that they are weakened.

The momentous changes are great increases in the speed and certainty with which fleets and ships move at sea; great improvements in the supply of intelligence, and in the speed of its transmission; and the substitution of coal, which must be stored, for wind, which was common, as the agent of propulsion.

Secondary changes are the increased range, rapidity of fire, and precision of aim of guns. The enormous increase in the cost of the warship; the ease with which she or the transport is destroyed. The rise of the torpedo, and especially of the torpedo-boat or vessel; the fear of the torpedo and of the submarine mine which is developed in the naval mind.

Certain matters remain much less changed. Shore batteries, though doubtless more costly, gun for gun, than they were a hundred years ago, have not increased in anything like the proportion in cost that the warship has, gun for gun.¹

The landing of an army on an enemy's coast is under precisely the same disabilities regarding wind, and sea, and tide, as it always was. There is nothing to show that speed of disembarkation has been, or can be, much hastened by any modern appliances, except perhaps, mere speed of transit between transports and shore.²

¹ In the days of sailing-ships it was usual to count the cost of a line-of-battle-ship at the rate of £1,000 per gun. To-day a battle-ship such as the "Nile" costs £28,000 per gun; and a cruiser such as the "Australia" costs £10,000 per gun.

² The Japanese took twelve days to land their horses for the march on Port Arthur.

The first result of the changes is that the whole theatre of naval war is reduced in effective area. Everywhere the time for which a garrison, acting in conjunction with the naval force, need prepare to hold out in case of attack is reduced.¹

An invading flotilla, though it may have an advantage in speed of transit, is as much at the mercy of the elements as to landing as ever it was. The defending fleet, or naval force, has precisely the same advantages of speed as the invading flotilla has, but it has gained the certainty of striking at a given point at a given time which it had not 100 years ago. It is impossible to measure the advantages it has gained in the receipt of intelligence. It is almost impossible to exaggerate the advantages which a mobile superior defending fleet has gained over inferior attacking fleets or flotillas by the substitution of coal for wind. Formerly the power of making voyages was as great for one as for the other. Now the power is taken away from the attacking fleet or flotilla and given to the defending fleet. Such a thing as "radius of action" did not exist 100 years ago. The attacking voyage was made with little or no reference to supply, for locomotion did not exhaust it. Now the attacking force cannot move beyond its "radius of action" unless it can secure a new centre to radiate from. The transports of the modern invading flotilla are open to sudden and terrible destruction at the hands of insignificant agencies used as torpedo-vessels and rams, which could not have been even imagined 100 years ago.

¹ The Falkland Islands and Natal are, as regards relief by a fleet from the United Kingdom, where Gibraltar was 100 years ago.

Taking the illustrations quoted in the notes to pp. 1427 & 1428, the difference which steam has brought about may be readily observed. A modern Hughes with a steam fleet at Suez would be as good a guard for Trincomalee, as the real Hughes was with a sailing fleet at Madras. It is not possible to conceive that a modern Suffren could have been allowed to accumulate a flotilla at Batticaloa, when a modern Hughes commanded a steam fleet at Madras, in touch with the telegraph which was not available to the modern Suffren.

The situation which allowed of the occupation of St. Vincent, and the subsequent capture of Grenada by the French in June and July, 1779, is not now a possible one, because of steam. Byron had a fleet not greatly inferior to d'Estaing's at St. Lucia, while d'Estaing with his fleet and flotilla was not 40 miles distant at Fort Royal, at the beginning of June. With two modern cruisers Byron might have had intelligence of the French fleet, fresh and fresh, with great ease every three hours. A single torpedo-boat destroyer would have reported the state of the French fleet every four hours. Dependent on the wind, a dozen cruisers might have left the British Admiral ignorant of French movements for days.

It was this want of knowledge that allowed Byron to go North, when d'Estaing went South. But as Byron was probably never more than 300 miles from the French fleet, a couple of swift steam vessels would have kept him informed of d'Estaing's movements from day to day. The knowledge that there was such a watch on him would have made it impossible for a modern d'Estaing to proceed. It was the knowledge that there was no watch on him, and that there could not be, because of the slowness of locomotion, that enabled the real d'Estaing to proceed. Exactly similar reasons forbid the possibility of such captures as that of Tobago being contemplated when the propulsive agent is coal, except by the aid of a dominant fleet.

I judge it impossible to doubt that the invader has many less chances in his favour, and must encounter many greater risks than were his lot in bygone times.

The power of the shore battery as against the war-ship has greatly increased. It may be doubted whether the power of the war-ship against the shore battery has increased in like degree. If it has, the palm is still to the shore battery, because of the enormously increased value of the war-ship in proportion to the battery.

The hidden submarine mine, and the possible auto-mobile torpedo, combined with the great value of the war-ship in comparison to these destructive weapons, must tend to hinder her from approaching an enemy's ports with as great freedom as was sometimes used in the past. On the other hand, the dangers of navigation are minimised. They will no longer hinder approach, or interfere with the maintenance of a position close to an enemy's port as they used to do.

I judge that the general effect must be to greatly hinder the attack on batteries by ships, but to greatly facilitate the watch which can be maintained upon an enemy's ports.

Unless it should turn out that actual blockade is more effective than it used to be, changes in war material and appliances do not promise to hinder the attack on commerce. When carried on out of range of shore batteries the defence of commerce concerns the Navy alone. But unless steps are taken to prevent it, the chief fields for the attack of commerce will lie in the immediate vicinity of the great commercial ports.

It will be necessary to keep these ports open by localising war-ships there, whose duty it will be to threaten, to drive off, or to capture, cruisers of the enemy designing to prey upon the inward and outward bound merchant-ships. This was the practice of former days, and its revival may be said to be certain, unless, as already observed, blockade can be made perfect.

The war-ships so stationed would not necessarily be of great force. It is not to be supposed that the enemy would, as a rule, employ ships of great power and value on a duty where the risk would be great, and the results subordinate. The mere knowledge and belief that his attack on commerce in the vicinity of ports will meet with resistance, would be sufficient to keep the enemy away from those localities. But still he might send a force on the duty of commerce-attack greater than the localised defending force. To avoid capture or destruction, the localised defending ships would, in such a case, require the support of a battery or batteries under which they might shelter till reinforcing cruisers could arrive. It is here, as ever, the question of time entering into defence. The enemy's cruisers dare not remain on the spot, dare not proceed to a serious attack on the batteries, even if there were any hope of silencing them without great risk. The enemy cannot tell from moment to moment that a greatly superior force will not put in an appearance, and it is always her plain duty to avoid the encounter with superior force.

To this extent the Navy and the Army will be always combined in

direct defence; but steam and the telegraph give it a power and completeness which it could not formerly possess.

It was not uncommon in former days for a localised defending cruiser to see an enemy's cruiser capturing ships within a few miles of her, and to be powerless, because of the wind, to interfere with it. That is no longer possible.

An enemy's cruiser off a port in former days had ample time for her operations, if there were no defending cruiser in the immediate vicinity on her arrival. Now she knows that if she appears off a port apparently undefended by war-ships, the telegraph will at once summon defending cruisers from all quarters if necessary, and the cruisers fifteen or twenty miles off when she arrived, will be upon her in an hour.

The defence appears to have every advantage, and the attack every disadvantage, conferred upon them by modern changes in the material and appliances of war.

And evidently, from what has been said, this remark applies not only to the attack on commerce by the inferior naval power, but to all kinds of attack on the shore by naval power. Dangers to the attack exist which did not exist in former days; precautions are now necessary which were unheard of in the days of sailing-ships.

But without question modern appliances have opened forms of attack, which, though they existed in early days, were not in common use. We must expect night attacks upon shipping, in harbours open to them, by torpedo-boats; and attempts by night to burn or destroy stores, such as coal, necessarily exposed on wharves for convenience; as well as attempts to destroy dock gates and caissons, etc., by high explosives.

It is not possible for anyone regarding Imperial defence as a whole, and always looking for its effect beyond the immediate objective, to believe that a paramount Navy will ever allow this form of attack to develop or become frequent. But at least in the early stages of a war such must be expected, and ought to be guarded against. No doubt the local naval defence may be most effective for torpedo-boats used against ships; but it appears that strong military guard will be the only one available against destroyers of stores and exploders of dock gates. At any rate, the joint defence here, between Navy and Army, should be close and intimate.

PRINCIPLES APPLIED TO THE DEFENCE OF THE UNITED KINGDOM AS THE HEART OF THE EMPIRE.

In order to confine this paper within reasonable limits, it has hitherto been necessary to keep the text pretty closely to abstract principles. Now I must speak of the concrete, and look at the defence of the British Islands from that point of view.

Considerable difference of opinion exists as to whether an enemy, having swept the seas of the Navy, would have the alternative of reducing these islands to submission by investment or by invasion. We are, happily, precluded from going into that dispute now, for two reasons:—The Army can have no functions in defence against investment; and

investment presupposes the break-up of the Empire and no defending Navy.

But in the abstract, the United Kingdom is, of all parts of the Empire, that which least requires garrison or land defence of any kind. Its position must be, and always has been, as the heart of the Empire, the great rendezvous of the naval defending force. So long as that force exists it is impossible for France, or Germany, or Russia, or all three combined, to contemplate attacks upon these shores on any scale which shall give notice of the intention. For the naval defending force will always be as near to the point to be struck at as the enemy's ports of issue are. In consequence, the enemy can never calculate on having time to complete any operation before the defending fleet is upon him; and the condition is a bar to his even planning an attack.

Moreover, the advent of steam and the torpedo has immensely increased the certainty and overwhelming effect of the defending stroke. So then if, as we know, the fear of the defending naval stroke did through ages of sailing-ship warfare preserve these shores from violation—except in cases where the country was, or was supposed to be, divided against itself—we are assured that the preservative effect is now more certain than ever it was, and the function of the Army in defence less than ever it was.

What is before us to discuss are the functions of the Navy and the Army in guarding the shores of these Islands from violation; though it must be admitted that a strange fundamental inner question meets us as to whether we ought to think most of preventing the enemy's landing, or most of dealing with him after he has landed. Without question, the vast majority of our countrymen speak and act as if the dealing with the enemy after he had landed was the important matter. Yet Lord Overstone's well-known and impressive warning was to the effect that it was the landing of the enemy, and not what might happen after the landing, that would bring about financial collapse.¹

Then, again, I cannot make discovery whether all the elaborate plans and preparations I read of, and which are reported to be so very costly, for dealing with the enemy after he has landed, are intended as a warning to deter him from contemplating invasion; or are made on the understanding that no warning of that sort will deter him; and that the best we can do is to fight with him when he has landed and passed into the country.

Nor, again, can I ever be clear whether, in arranging these plans for fighting a landed enemy, we are contemplating the condition of a Navy utterly defeated, driven into her ports and masked there; or of one free to act in defence, but possibly not superior to that of the enemy; or, lastly,

¹ "It cannot be necessary to enlarge upon these considerations; they would follow as the immediate consequence of the *landing (sic)* of an invading army, without reference to ulterior operations, and the serious import of them cannot be overstated." — Lord Overstone, Report of the Commissioners appointed to consider the Defences of the United Kingdom, 1860, p. 91.

of a Navy perfectly intact and believed to be at least equal to the two next greatest Navies in the world.

All I can clearly gather is that an expenditure competent to give us quite a fine mobile Army kept ready, as the Navy is, for immediate action in any part of the world, goes chiefly on these preparations for fighting with the enemy after he has landed.

But I am now happily free from considering that question at all. In such an affair the Navy has no function. And whether it is shut up in its ports; or finds its superiority doubtful; or believes itself at least equal to the two other strongest Navies in the world; it cannot help the Army in fighting in land battles.

The attacks I understand that we are preparing to meet, without reference to any powers we may have of preventing them, are (1) invasion; and (2) direct attacks by ships upon commercial or naval ports.

I understand we propose to prevent to a great extent, rather than to resist, night attacks by torpedo-boats and surprise parties. We intend to close certain ports by physical obstacles during the hours of darkness. So far the Army can have no function in this preventive form of defence.

But upon the question of invasion, some general remarks are necessary.

"The invasion of a country like Great Britain, of an insular situation and very considerable extent, defended by a powerful fleet and army, either with temporary or particular views, or for the purpose of absolute conquest, must always be attended with great difficulty, danger, and expense; and can scarcely ever happen suddenly, or take us unawares, before we have some sort of intelligence or information of our enemy's designs. For the time necessarily spent in making the immense preparations requisite for such an undertaking, the rapidity with which rumours of every naval or military transaction of great magnitude or importance are propagated by the intercourse of neighbouring nations; the impossibility, almost, of transporting so large an armament across the sea, without the knowledge of some one or other of our cruisers, and the vigilance which war naturally excites in those that are engaged in it, must render entire secrecy impracticable, and discovery of intention to a certain degree altogether unavoidable."¹

This, after what I have said, sounds very much as if I had written it yesterday. But it was written more than 100 years ago by an officer who debates the question just as I do, and who yet must have been aware that three years, four years, and five years before he wrote, the bulk of our naval defending force had been sent from the Channel for a month's voyage out and a month's voyage home in each year; and that six years before, the citizens of Plymouth had had an opportunity of seeing with their own eyes the dominant Franco-Spanish fleet.

¹ "A short Essay on the Modes of Defence, etc."

Yes. And then four years after these words were written, the ruling section of a Royal Commission on Defence, knowing well what had happened, practically declared it impossible that the defending fleet could be absent when there was the slightest risk of invasion.

No doubt the idea of sudden invasion is at the bottom of most, if not of all, our expensive preparations to fight a landed enemy. I suppose we could go on arguing for ever, in the absence of materials, as to whether sudden invasion by any large force is, or is not, a possibility. But I never heard of anyone studying the experience of invasions, or considering in detail the preparations it is necessary to make before such a thing could be carried out on any scale, who afterwards spoke of the possibilities of sudden invasion.

If the idea of a sudden invasion by a large force is responsible for any of the great expenditure, and the small mobile Imperial Army, already referred to, I can only say it is one of those peculiarly English anomalies, without which no arrangement ever seems complete.

In any case, the functions of our Army, as allowed for in the defence of the United Kingdom, are strangely anomalous, and are irreconcilable with any hypothesis connecting them, or disconnecting them, with the functions of the Navy.

If the Navy limits the size of the invading force to the 100,000 men, which is commonly taken, then on the face of it the preparations to fight the enemy on land are much too large and too expensive. All experience, whether of success or of failure, in invasion makes it absurd to believe that an enemy could succeed, or could think of succeeding, unless he invaded with a greatly superior, generally with an overwhelming, force.¹

If the Navy does not limit the size of the invading force, then our preparations for fighting it after it has landed are ridiculously inadequate.

I cannot myself ever consider a question of defence until after I have projected my own mind as far as possible into that of the enemy contemplating attack. When I am told, and admit for the sake of argument, that the Navy has not power to prevent the landing of a complete Army of 100,000 men, my mind at once flies to that of the hypothetical General to whom the task of invading is allotted.

As such a General, I should first reflect that owing to the action of the British Navy, I can only invade as a flying column, and that therefore

¹ The total garrison of Grenada in 1779 was 150 Regular troops and 400 Militia. The regular citadel of the island was incapable of resistance, being commanded by Hospital Hill. This height the Governor, Lord Macartney, temporarily fortified, and made his stand in. Against such a garrison, so placed, d'Estaing, well informed of its force, thought it prudent to lead not less than 6,500 Regular troops, his ships assisting by their fire; and in taking the place he suffered a loss of 400 men in killed and wounded. Is it possible to conceive of him invading the island with 110 men? That is a proportion which we are asked to believe is reasonable for an invader of Great Britain.

I must carry all my supplies with me. I am told that I am to get my advantage by an immediate march on London, which will take me two or three days for certain. I may be sanguine enough to believe that things are so curiously managed in the English Army, that though there are more than half-a-million of troops on its rolls in the United Kingdom, desultory attacks on my rear and flanks will be the only things to impede my march on London, and that I shall arrive with my army fairly intact in one or more columns at points such as Tooting, Streatham, Dulwich, Sydenham, Lewisham, or Kidbrook, with five or six miles of practically unbroken street between me and the Thames.

Now, before I go farther in consideration of my task, I must be clear whether I am bent on conquest, on plunder, or on destruction? I am but a flying column, and my retreat across the sea is cut off for certain, unless by conquest I can order myself a safe conduct back again. I cannot plunder unless I also conquer. If I destroy without conquering, I shall be myself destroyed. It is clear then I am come to conquer, and in the first instance I am going to master a population of more than five millions, and an Army of half-a-million closing in upon me. I am pretty sanguine, I assume that each of my men under proper conditions is superior to five armed and drilled Englishmen, can keep those five at bay, and also control a civil population of fifty men, women, and children.

I recollect that something of the same sort was once before attempted. In 1806, 1,600 British troops invaded Buenos Ayres, with near about the same proportionate population to manage—70,000—but with no armed force immediately opposing, and with communications to seaward intact, and the ships in sight. The invaders easily took the city, but were as easily made prisoners soon afterwards and sent up the country, being in a sense absorbed.

But I am sanguine still. The English are not like the Buenos Ayreans: they could not hold the latter in subjection when their communications were open. I shall hold all Britain in subjection when these are closed. I shall command the Navy and the Army to open my rear and allow reinforcements to pour in, or permit me to march back with my plunder.

But I am not sanguine enough to suppose that these 5,000,000 of people, backed by their assembling half-a-million of troops, will allow me to march with impunity through five or six miles of street, every house in which is a natural fortress. Experience refers me to General Whitelock's Court Martial. In 1807, he marched an Army in several columns down the streets of Buenos Ayres. Most of it then surrendered, and by using the part that had not surrendered he bought the freedom of the rest with a promise to at once evacuate the country. The prospect is not promising for me as a General, but I am still sanguine; and with the knowledge that my men will be shot down as they advance, or at certain points pre-arranged by the Londoners; that, if I cannot overawe the population, that part of my army which reaches

the heart of London will be enclosed there, and cut off from supply; yet if I see my way to overawe, I shall be able to go on.¹

But how to overawe? How can one armed man overawe another armed man, putting aside the overawing of four more? How can one armed man without lawful authority, overawe and control a mixed population of fifty, backed by five armed men; and a further mixed population of 275 from the provinces?

But not going beyond the idea of overawing the five millions of people in London so that they shall compel the English Government to obey me, the difficulty that presents itself to my mind is, how to let them know that I am there overawing them? Only a very small portion of the Londoners can possibly see any of my troops, not a much greater number can hear my cannon; quite a few only can hear my rifles. How am I going to get the vast bulk of the population to recognise my presence? Some batteries of field artillery near the Crystal Palace might show smoke if the weather was clear, and possibly a good portion of South London would hear the reports, but very few could be sure that I was not firing blank cartridge. It begins to dawn on me that most of my overawing must be done through the newspapers, because of the vastness of the area, and the enormous numbers to be got at.

My doubts as to my powers of overawing and controlling increase as I face the conditions. My only chance of avoiding destruction by the accumulations of armed men closing in on me and cutting off my supplies, is concentration; yet concentration will starve me. Where is this central point at which I can get control? It seems to be either Downing Street or the Bank of England, but the sure way for the British to prevent my doing them harm is to altogether decline to take any notice of my orders and proclamations from either place; to surround me, and wait till I surrender as, if I cannot overawe, I ultimately must.

I cannot help asking myself, how it is that no invasion of England was ever planned that did not rest to a great extent on the belief of meeting allies there?

Coming back to my own character, after inhabiting the mind of a hypothetical General, I am bound to say that if there were not a single

¹ Whitelock's total force consisted of over 7,800 men, but the whole of it did not attack. The city of Buenos Ayres was in the form of an equilateral triangle, with sides a mile and a half long, the base forming the shore of the river. The streets ran parallel and perpendicular to this base, so that the longest streets, from the furthest points inland to the water, were about a mile in length, most of them being much shorter. The Army was prepared to march down fourteen of them, from an inland position, towards the river. A brigade of the Army had, a couple of evenings before the march down, easily defeated what appears to have been the bulk of the Spanish force, and captured ten guns. A flag of truce, returning from the centre of the city, reported it to be a mere scene of riot and confusion. The columns marched down entirely unopposed till they reached the centre of the city. Then fire was opened on them from every roof and window, and column after column surrendered, till only such as had, fortunately, remained on the outskirts, preserved their freedom.

armed man in the island, but only a Navy to cut off his return across the sea, I think the production of a General who would undertake to invade Great Britain with only 100,000 men, and without prospective allies in the country, would be a miracle.

But I cannot believe it would be possible, with almost any naval force capable of opposing it, to land even 20,000 men on the shores of these islands without its being opposed by sea.

It is common to urge greater expenditure on the immobile defence of the British Islands because possible distributions of our naval forces would give time for the enemy to complete his landing unopposed. Two cases are quoted, occurring in recent years, where it is held we left ourselves so open. The one case is said to have occurred in 1878, when the Mediterranean Squadron passed up the Dardanelles; the other, in 1882, when the Mediterranean Squadron bombarded the fortifications of Alexandria. I suppose it is meant that the batteries on the shores of the Dardanelles might have confined the ships to the Sea of Marmora. I do not understand why a fleet in action at Alexandria was less ready to obey the signal to proceed to Spithead than one not in action; but the meaning, doubtless, is that no force was left at home sufficient to interfere with an enemy taking a sudden resolution to invade, and that the time required by such an enemy to begin his preparations and complete his landing was less than the twelve days (say) occupied by the voyage from Alexandria to Plymouth. Admitting such miraculous powers in the hands of the would-be invaders, it is necessary to point out that in 1878 the home fleet in commission consisted of 17 battle-ships, 5 cruisers, 23 gun-boats, 8 small vessels, and 2 torpedo-boats. Complete in reserve were 2 battle-ships, 5 cruisers, and 7 gun-boats. Besides, there were 50 sail, of which 10 were battle-ships, completing in the Reserve.

In 1882, there were at home in commission 17 battle-ships, 1 cruiser, 21 gun-boats, 8 small vessels, and 9 torpedo-boats. Complete in the Reserve were 10 battle-ships, 7 cruisers, 11 gun-boats, and 18 torpedo-boats. Besides, there were 42 sail, of which 5 were battle-ships, completing in the Reserve.

That is to say, any prospective invader would, in 1878, have known that he had to beat a ready fleet of 67 sail, including 19 battle-ships, probably capable of being largely increased in a few days. In 1882, he would have had to meet 74 sail, of which 27 were battle-ships, besides a new and terrible danger to transports, 27 torpedo-boats. This force, too, would have been largely reinforced in a few days.

The development of the torpedo-vessel every day puts the possibility of invasion farther from us. I do not know how, in any case, and supposing an absence of our battle-fleet, and a presence of the enemy's (which could only be miraculous), the cloud of tugs to act as rams, of small vessels with torpedos, of gun-boats and vessels, which exist and are not capable of quitting the country, could be prevented from making short work of any gathering of transports crowded with troops which anchored near our shores. It has been a well-known rule in our Autumn

Manceuvres that a ship at anchor within a certain distance of an opponent under way was necessarily *hors de combat*, because it was certain she could be instantly rammed and destroyed. Almost any tug-boat or small steamer under way could safely sink the largest modern transport at anchor in a few minutes by ramming her.

The conditions of danger to the transport never were in former times what they are since the advent of steam; but the development of the torpedo-boat, and the torpedo-boat-destroyer, have immeasurably increased them, and I cannot conceive any Admiral could face them when they were at the highest point anywhere near our shores.

Nor do I know how an invading Admiral could frustrate such attacks on a crowd of transports but by closing all the harbours from which our destroyers could issue. The difficulty of so closing them is one of the most patent features of modern naval war.

If we turn from this idea of invasion to that of isolated attacks by the enemy's ships in our ports and harbours, we see that, even if such attacks could be contemplated, the changes in war material have given the lightest batteries a power of defence which they never had before. But we see also that steam and the telegraph have put it out of the enemy's power to think of such attacks, because the rapid action of the defending naval force would never give him time to complete them.

Thus we have the United Kingdom under conditions where a garrison is least required because of the perfect defence which the normal mobile naval force affords. Under conditions where, even if there were no garrison at all, it is most difficult to understand how any flying column could hope to derive an advantage from projecting itself into the country. Under conditions where, even if there were no regular defending Navy, the perils to an invading flotilla are such as our forefathers never dreamt of.

We see our ports and harbours normally secured by the advent of steam in a way they never could have been in the days of sailing-ships, and further secured, if that were necessary, by the greatly increased power conferred on batteries.

I do not know on what reasoned ground we spend large sums on re-defending what, under any circumstances but a total absence of naval force, is already fully defended.

CONCLUSION.

That which is on a great scale the case with the United Kingdom, namely, the lessened functions of the Army, because of the gathered naval force in its vicinity which is enforced in consequence of the nearness of possible enemy's ports, obtains on a smaller scale all over the Empire.

The gatherings of the mobile naval defending force must always be greater near probable gatherings of the enemy's naval attacking force; and there the defending functions of the Army are least required. There the immobile defence is least likely to be called into action.

But it is not at all unreasonable, it has the support of experience, that mobile military force should be collected at these centres, on a smaller scale, but on the same principle that now collects it in the United Kingdom.

As colonial positions are extended from the central gatherings of mobile force, there the functions of the Army in defence are magnified and increased. From these points intelligence of projected attack might be slower in reaching the mobile force, the voyage of the relieving squadron or flotilla would be longer. It would be necessary for the enemy to be made aware that such positions would take longer to subdue than such as were nearer to the mobile concentration.

But the highest function of the Army in defence is found in those Imperial frontiers where the Navy can have no functions, and where her assistance to the Army cannot extend beyond transport.

But mere distance from the assemblage of the mobile force does not make it more probable that the enemy will attack that position, even if it be weakly defended by localised or fixed force.

The enemy has still to think of conquest, of plunder, or of destruction. He cannot conquer a large population with a small force; nor will he reasonably attempt a conquest that he has no prospect of holding, in face of a predominant Navy and a mobile Army ready to displace him.

Plunder to be of any use must be carried home; and home is more or less barred by the dominant fleet.

Destruction is a serious thing for the inferior sea-power to contemplate. Reprisals will certainly be measured out on twenty times the scale by the predominant fleet.

After a review of this kind, in which it has been necessary to deal chiefly in generalities, I conceive that I have set up a *prima facie* case for a larger and mobile Army, to be obtained by suppressing all over the Empire, but most completely in the British Islands, those exaggerated ideas of localised and immobile defences which are now so strongly advocated, and which absorb funds that could and should go to the mobile Army.

It will be noted I hope, that I am not dealing with that death struggle which may be the fate of the populations of many parts of our Empire, if ever the power of each helping the other is destroyed by the suppression of the Navy. If I am told that I ought to consider such a conjuncture, my answer will be that I am quite ready to do so, so soon as some other authority has done it, or so soon as I see anywhere the slightest preparations for it going on.

Field-Marshal Sir J. LINTORN A. SIMMONS, G.C.B., G.C.M.G., R.E. : I have listened with very great attention to this very able lecture of my friend Admiral Colomb, but I must say that I do not agree with him in all his premises, nor altogether in his conclusions. The Admiral commenced his lecture by describing two systems of defence—the one *instinctive*, and the other *reasoned*. I happen to have been Inspector-General of Fortifications for some years, and I have been employed on the Royal Commission for the defence of British possessions and commerce abroad, as also on secret commissions; and I must say that I have never heard, until reading this lecture

the distinction drawn of "instinctive" and "reasoned" defence. I have no doubt that if you listen to all that is written in the papers, by people who know very little upon the subject, you may classify their ideas in various ways; but I can safely say that every point that has been brought before the commissions or committees upon which I have been employed has been thoroughly reasoned out. I observe also that the objections taken by Admiral Colomb to the employment and distribution of military forces in various parts of the world are not adhered to in all that he says, for he bases his ideas upon certain defences which must have been already constructed before war takes place, and, therefore, must be occupied by garrisons. He speaks even of commercial ports as having batteries to defend them. Well, batteries that are thrown up for defence must have men in them, and therefore involve a military force of some sort or another, and so it is throughout the whole Empire. But I think there is one point which has not been prominently brought forward in the lecture, but which is of the greatest possible importance. Admiral Colomb says that the Navy and Army must co-operate in all that is done for the defence of the Empire, and that there ought to be a thorough understanding as to their respective functions. Years ago I expressed the opinion very strongly that there had been no committee or commission, and I believe up to the present hour there has been no committee or commission which has ever considered the question of the Defence of the Empire as a whole. In 1845, Sir John Burgoyne published a letter from the Duke of Wellington, which called attention to the absolute weakness and utterly indefensible condition of these islands. It created great excitement throughout the country, and I believe, although the Volunteer movement did not take its rise until some years afterwards, that that letter, and the opinions to which it gave rise, had a great deal to do with that movement. What was the basis upon which the Duke of Wellington wrote that letter? It was, first of all, that the Navy in those days was totally inadequate for the duties it had to do in the defence of the Empire, or even of these islands. Happily, this state of things is very much changed, and we now have a fleet which is infinitely stronger than the fleet then in existence. There can be no doubt that the Navy of the present day places this kingdom in a very much more defensible position than it was formerly, but I still think that the whole question has never been thoroughly considered; and until it has been considered, and until it has been determined what the strength of the Navy should be with reference to the Empire, its Colonies, and commerce, it would be an exceedingly risky thing to reduce your military forces, or your garrisons. It is true that an adequate mobile force, such as the Admiral alludes to, in the United Kingdom would be far superior to the Auxiliary forces, which now require a great deal of expenditure, and are not so adapted to meet an enemy if ever he should land upon our shores. But the difficulty in regard to this question is that it is one of expenditure. I believe that the existence of the Volunteers has been of great use to us. The hypothetical General that my friend the Admiral has alluded to in his lecture, has explained to us that the position we hold in this country is very secure, and therefore it would be a serious matter to interfere with it. There are a great many points in the lecture which I could have criticised, but I will only touch upon one or two. Throughout the lecture there is a general assumption on the part of the Admiral that he will have abundant intelligence from all parts of his command, and know exactly what is going on within the large extent of ocean in which he has to act. Well, I doubt whether this intelligence will be so certain as my friend seems to think it will be. In the event of war, submarine telegraph wires will be cut, without a doubt. I remember that before one commission on which I was employed, we had evidence of a Foreign Power making preparations with the object of cutting submarine cables, and therefore, I think, although we may use them so long as they last, we could not depend upon them long after the commencement of a war. It does not require a naval expedition to cut a cable; a single ship properly fitted, in the wide ocean, out of sight of any cruiser, may very

easily cut a cable, however deeply submerged. I think that is a point which requires very careful consideration. Then there is another point. My friend points out, I think, eight stations at which squadrons should be concentrated, namely, Malta, Hong-Kong, Bombay, Simon's Bay, Bermuda, the Falkland Islands, Victoria in British Columbia, and Sydney, New South Wales. I think there is no doubt that the British public would be very uneasy if large squadrons were detached to such very distant stations. Each one of these eight squadrons would diminish the force upon which we must depend in our home and European waters for defence as well as for attack, and I think it is very questionable whether we can afford squadrons of any considerable extent to be despatched to such enormous distances, whence their concentration would be difficult in the seas adjoining any other part of the Empire. It is more than probable also that the chief defence of distant stations and Colonies may in many cases be best provided for by the action of the Navy in European waters. These are important points, but there are many others that I will not touch upon. There can be no doubt that the superior force of the Navy is what we must depend upon to prevent the invasion of this country; but I am very glad to think that we are safe, as the imaginary General says we are, in our present state. But the question is one of such vast extent and importance that it is impossible to settle it by discussion in this room. I think that the fault lies in successive Governments, who have never dared to face the question of the Defence of the Empire. I remember that in 1860 there was a great hubbub made. At the time Lord Palmerston was Premier, he started a commission having for its object to report on the Defences of certain of our Naval Ports. Its functions were not the Defence of the Empire, nor even the Defence of these Islands, but were merely local. This commission had to do what my friend does not quite approve of: the members had to concentrate their thoughts upon the various ports which were indicated to them as those which it was necessary to place in a strong position for defence. A very large sum of money was spent on those defences. I believe they are useful as they are; but I think it is doubtful, if a Government had placed the question of Imperial Defence before a commission of the two Services competent to deal with it, whether the defences of those ports would have assumed the extent to which they were carried. The point I should like to see brought out by this or any other discussion is the necessity of a thorough investigation of the whole subject of Imperial Defence by a responsible committee or commission appointed by Her Majesty's Government.

Captain W. H. JAMES (late R.E.): I am sure my excellent friend Admiral Colomb knows that the reason I offer any criticism upon his lecture is the same as that given by himself, namely, a desire to see this question as to the Functions of the Navy and Army in the Maintenance of the Empire thoroughly threshed out. I am very glad to see that I am supported in that view by Sir Lintorn Simmons. I suggested myself, some years ago, that what we want in this particular instance is a committee or commission of naval and military experts, who could be assembled to ascertain what we want in either direction, and whose report should be given to the people without any interference by the Government that has instituted that commission: for I hold it to be of the highest importance that we should know, not what a Cabinet Minister thinks on this subject, but what people whose whole education and whole career in connection with the matter think on the subject, which is essentially a highly technical one. I think that everybody who has heard Admiral Colomb's lecture will agree in the main with what he has said; and if we differ from him, those differences will be merely differences of degree, and not of principles. I cordially agree with what he has said about the necessity of a mobile force, for the first essential in defence is the power of assuming the offensive; and unless you have a mobile army—I use the word in the sense Admiral Colomb has used it—it is impossible to act promptly on the offensive. I think all military men have always appreciated this, and if it has not been appreciated by

anybody in the Empire, it has not been so by our rulers, who have never really considered naval and military questions. I must say that when I came to the details that Admiral Colomb gives us of the expenditure, and found throughout the proposition that we spend too much on the immobile forces, I thought the Admiral lays himself very much open to criticism; and for this reason. I find that he gives the charges, in sums which are expended on the mobile army, as somewhere about £5,000,000, and for the immobile army £3,607,500; and this is made out of the list of figures he has given at the bottom merely by adding the effective numbers of the garrisons and defensive positions at home to the effective charges of the troops held in reserve. I would point out to Admiral Colomb that there are such things as depôts, as recruiting agencies, and other machinery of that kind, which are a part of the effective forces, and absolutely necessary for it. I presume that he would not look upon the marine depôts, or the "Vernon," or the "Excellent," or "Ascension," as immobile, and, therefore, ineffective. They are as much a part of the Navy as similar organisations are in the case of the Army. Again, I think that in his desire to see the Army put in a proper position he has, perhaps, gone further than most people who have studied the subject would be prepared to follow him: when he thinks that France and Germany and Russia would look to our Army as a pattern, just in the same way that they look to our Navy, I think that is going a little beyond what most of us think those nations would be prepared to do. I certainly agree that the Empire is not safe with its present small mobile force; but that, I must point out, as Sir Lintorn Simmons said, is very largely a question of expenditure, and it is also a question of the system which we employ. Rightly or wrongly, we appear to be following a voluntary system, and that system has found us always a small Army, and a large mass of Auxiliaries behind it. That was true in the beginning of the century, and that is true at the present time. It does not follow that if you sweep away these Auxiliaries, you can ever be sure of having a larger Army of a mobile character. It is not at all sure that we shall get the men to come in on the terms that we should be able to pay them; and, certainly, I do not think it would be a source of saving to sweep away this Auxiliary force, as Admiral Colomb proposed, in order to gain a larger mobile Army; for I feel certain that the money which we should save in one direction would be vastly exceeded by the necessary expenditure which would be incurred in another. But there is no doubt we do want an increase to our Army, and an increase we must have. I think that has been admitted by the present Secretary of State for War; I judge so from a speech he made a short time ago, and from the answer to a question put to the Under Secretary of State for War the other evening. If we have a larger Army for expeditionary purposes, it necessarily follows that we should have such a force in England as will absolutely prevent invasion. It is not true to say that I or anyone else who advocates a larger army does so because they wish primarily to defend this country; but having a larger Army for expeditionary purposes for use outside the kingdom involves such a force in England that it would be ridiculous to suppose that any enemy would ever attempt to invade us. With regard to the complaint of niggardliness, I do not think that anybody has seriously put that forward; certainly, I am quite sure that no soldier has. On the contrary, I believe most soldiers think that if we had a better organisation than we have, we could for the sum now expended probably get something better. I do not understand what Admiral Colomb means by the independent action of the Navy and Army. It always seems to me that our history shows that the Navy and Army have always acted together, and I cannot conceive anybody outside "Bedlam" ever proposing that one should act independently of the other. I should like to join with Admiral Colomb in deprecating the amount of money we have expended in fixed defences. It does seem to me that in many of the fortifications we have erected in England, the money might have better been kept in the nation's pocket. Let me give an example. Plymouth is defended on the land side. I, myself, can conceive no

possible combination of circumstances under which Plymouth is likely to be exposed to a regular siege. For the sea defences, yes; but not for the land. It seems to me that Admiral Colomb is perfectly right when he suggests that for these purposes a mobile field army is very much better than any amount of fixed fortifications. I do not think he would find anyone to support him in the view about Paris. The fortification of Paris rests on a different basis. Napoleon, in 1815, put up provisional defences, because he knew that the loss of Paris meant the loss of his crown. Certainly, the five months' defence of Paris in 1870 and 1871 shows what the value of these fortifications are. But in the defence of outlying positions, I cannot think there is any doubt but that we should have the minimum of fixed defences, and the maximum of mobile defences. With regard to the question of the appellation "the First Line of Defence," I really think it is a very harmless phrase. It is used by Robinson in his book on the British Fleet with regard to this country, and I think most people have used it in the sense that he uses it there. No one, I think, imagines that round England we have a string of ships which we call "the First Line of Defence," but rather that we use the expression because it means that the Navy is the first that comes in contact with the enemy. With regard to the *instinctive* school and the *reasoned* school, I would suggest a better definition to Admiral Colomb. I would call one the *foolish* school, and the other the *wise* school, and I hope he will allow me to add myself to the latter category. Again, I will put it to him that the imaginary General would overawe the population in London in the same way that the "fleet in being" would prevent the invasion, or the action of another fleet. The overawing would be done, not necessarily by killing all the inhabitants of London, but by occupying certain centres under martial law from which the influence would spread round to others outside the circle of each particular place. I cannot help thinking myself that if the enemy got into London, it would be a bad day for us; and that, although it might be difficult for him to get out, still the moral effect of his presence would be very great indeed on the country, and possibly lead to the termination of the struggle.

Mr. HENRY LAWRENCE SWINBURNE: I should like to ask the lecturer one question. He says:—"If the admiral had intelligence that a flotilla was about to sail from any port or ports to attack positions that he had it in charge to defend, he must immediately get into touch with that flotilla in order to destroy it as soon as it puts to sea." And further on he says again:—"If he did not know where the enemy—in fleet or flotilla—was, he could not move at all. But neither in this case, nor in any other where the admiral was in sufficient force, would the question of weak or strong land defences concern his movements." I take it from this that he means that the admiral's main object would be to at once seek for the enemy's operating fleet, and if he could find it bring it to action irrespective of whether the land defences of the territory his fleet were protecting were strong or otherwise. But on this territory are those bases on which the admiral's fleet must rely for its upkeep in a state of perfect war efficiency, and it appears to me that if the admiral had the positive knowledge that his most important bases, his coaling and re-fitting stations, were adequately fortified to resist attack for a certain period, it would give him more freedom of movement. Suppose, for instance, that a certain enemy's force has eluded the blockade we are maintaining of such enemy's European ports, and escaped out into the Atlantic. The exact objective of that force would probably not be known, but we would presume that its objective was the territories guarded by the Cape or North American squadrons. The officers in command of those stations would at once know by wire of the escape of such force, but they would not know for certain its destruction, and each officer would make his dispositions assuming that his territory was the object of attack. Now, if he knew that his bases were for a given time secure against attack in the event of his enemy's eluding him and getting at his bases before he could bring him to action, would he not feel that he had a freer hand to

push boldly away from his base in search of his enemy? And, on the other hand, would not the knowledge that his bases were *not* adequately fortified incline him to say, "Well, if I push to sea to look for the enemy and they elude me, I may return only to find my bases destroyed; or if they divide their force and I encounter and defeat a portion of it, I will on my return find that the other portion of it has destroyed those coal stores and docks on which and in which I must replenish and refit whether I am victorious or whether I am defeated." Again, he might have on his shoulders the responsibility of two equally important bases, and it might be a question whether he would not have to seriously consider the advisability of dividing so as to allot a portion of defence to each. None of these considerations would arise if his coaling and refitting bases were to a reasonable extent secure against attack. In conclusion, I can only say that it appears to me logical that such land defences should belong to the Navy and be absolutely under naval control, for the Navy only can be the proper judge of the quantity and quality of such defence that is necessary.

General Sir H. A. SMYTH, K.C.M.G., R.A. : Although the defence of the country is not to be determined in this room, as we have been reminded, there is a general consideration bearing upon it, which, I think, has been often dropped from sight of late, but which I would submit to the recognition of my comrades of both Services. I think that most of us in this room are prepared to concur heartily with Admiral Colomb in the abstract principles relating to the defence of our extended Colonial Empire which he laid down, especially in the strong insistence he made on the value of mobility as applicable to the general defence. But there exists in our Empire a peculiar condition which must diminish, and possibly even over-ride, these principles in their application to our defence. That condition is the transcendent importance of the centre, or heart of the organisation, of the whole Empire. It transcends the other considerations, because if we were to lose every outer part of the Empire, and retain the heart, we should expect in due time to recover all those outer parts; but, however much we retained those parts, if once the enemy got possession of the heart of our organisation, we need never expect again to be in a position to hold any Colonies. Thus it is the absolute security, beyond all risks, of our centre that we have to assure, and I venture to say that I am not quite satisfied with the assurance that Admiral Colomb has offered us in his application of the abstract principles. He tells us, of the United Kingdom, that "its position must be, and always has been, as the heart of the Empire, the great rendezvous of the naval defending force," and "the naval defending force will always be as near to the point to be struck as the enemy's ports of issue are." It is on this great rendezvous of the naval defending force, and its nearness, that very many of us demand greater assurance. We have been taught that in former times, especially in the last great Napoleonic war, the naval defending force was not always there; it was led away by various considerations, and there were several occasions when it was not so near as the enemy's ports of issue were. These points were within the cognisance not only of our own side and of our great antagonists, but they have been commented on by an impartial historian of great renown—Captain Mahan—who has pointed out very distinctly, I believe, that there were occasions upon which the French fleet, or at any rate the fleets of the French and their allies, might have established themselves in temporary command of the Channel, if only they had known how to take advantage of situations which actually occurred; and although they did not so take advantage, we wish to be assured against the risk of its being taken in the future; and the only way at present known to us is to have available at home a superior land force to such hostile force as may be thrown on our shores. That may be a larger or a smaller force, according to the circumstances which may at the time guide the disposition of our own naval forces; but I should suppose it is right to demand the power of meeting any hostile forces that may be thrown on our shores with a superior force of trained troops. The needful amount of this

force may be a matter for further discussion, but I think I will stop short here with the enunciation of that general demand.

Admiral FRANCIS A. CLOSE: I do not intend to criticise the lecturer's remarks on military matters; as a naval officer I am not competent to do so, except where they are in touch with the sea. Napoleon, not trusting his own experience on naval matters, always had "Seamen of the Guard"; and it is to be regretted that the same course is not followed by military men. For the foregoing reasons I consider the most important paragraph is that, where the lecturer says:—"I believe we make a great mistake in not more closely associating the ideas of naval and military defence in conjunction." That great man, Balfour, confirmed this statement, when he asked for a "Minister of Public Defence," and obtained a United Service Committee, which, to be of any real service, should consist of the "Intelligence" Departments of the Admiralty and War Office, *compelled* to meet periodically; with such a committee we should not see our maritime forts useless as they are now, by reason of the officers in command having no means of knowing a friendly man-of-war from an enemy under false colours. An officer of the Royal Engineers, in command of a district and certain maritime forts, informed me that they depended on the coast-guard for such information. The folly of the reply will be patent to naval officers only, and I mention it to prove once more how impossible it is to defend a maritime frontier without the advice of naval officers. No doubt the official reply is, and always will be, that the War Office are glad to receive the advice of naval officers. The real feeling is depicted by one of their members (a general with a handle to his name) telling me (unofficially, of course) that it was cheek on my part, advising them how to do their work, by writing a letter in the *Globe*, pointing out the danger to which London was exposed from any marauding gun-boat, for want of a bridge of boats (vessels of 200 tons) to stop all river traffic at Tilbury Docks. The lecturer stated "that our ports would be sealed with booms; but that was a naval question." Would the defence of London, by the Thames, be a naval question after passing Sheerness? Here we have another open question for the united service to consider. There is, in fact, no united service in the true sense of the word, except in time of war; in time of peace, when we should be making our preparations, there is not enough united action, therefore, I agree with the Field-Marshal who has just stated "that we want a Royal Commission to bring the two Services together, and thresh out the whole question of defence," including, I hope, the question of food supply from over the sea, which is of paramount importance; for without it, all our preparations for defence are useless; otherwise the resources of the country are so great that, though we cannot apparently give up the old habit of "preparing before the enemy," still we need fear no surrender so long as food is not at famine price. The Minister of War and the Commander-in-Chief are in the positions of civil and military governors of a great fortress (the United Kingdom), with a wet ditch round it (the sea); they are responsible that some provision is made to feed the garrison and civil population, if at any time we lose command of the ditch; therefore, I say, better reduce the army to buy food, and teach our 50,000 police how to use a rifle, and we need not fear invasion. All European Powers make their police available for military service, and certainly they have more experience of invasion than we have.

Mr. T. MILLER MAGUIRE, LL.D. (Second Lieutenant 14th Middlesex (Inns of Court) V.R.): I speak here neither as a military expert nor a naval expert, but I do not know that Admiral Colomb will be offended if a member of the general public ventures to pass a few remarks upon his exceedingly able and most instructive lecture. The difficulty in regard to a lecture such as the Admiral's, is that it is almost impossible to criticise a philosophical treatise, at any rate, in ten minutes. If it had been a loose lecture, or a careless, or a rash lecture, there would probably have been a violent and interesting discussion; but as it is only a philosophical, well-reasoned, and *not* "instructive" lecture, all we

can do is to bow to the superior authority of the Admiral. Nothing pleased me more than his picture of the forlorn foreign General marching into the heart of London. That distinguished officer seemed to think that the public would be frightened by him and his 50,000 men, all who could possibly reach the Bank and its environs. I do not speak as a Regular soldier, but as a member of that Auxiliary force which I think the Admiral is inclined to abolish; as a humble member of the British Volunteers, I undertake to diminish at least by one, any force which the foreign General brings into the heart of the Metropolis. The gallant Admiral also alluded to the functions of the fifty men, *women*, and children. There are several ladies present, and I am glad to be able to assure them that I have seen civil war in Belfast, and that the ladies on that occasion were the most desperate of soldiers. In the very beginning of his lecture, the gallant Admiral said something which in my humble sphere I am always trying to teach. He says "I claim, before we discard experience, that we should listen to the lessons of experience." I think a great deal of our public evils, and of our military and public deficiency, is simply due to the fact that we do not pay attention to the lessons of experience. I wish the gallant Admiral would one day write an essay to this effect: that if we are to hope for any effective political action with regard to either the Navy or the Army, a radical change must be made in the programmes of our public education, and that Englishmen generally must begin by being taught clearly and fully the history of Great Britain, the history of the past dangers and exploits of our people, and their responsibilities and difficulties in connection with their Empire. Until that occurs you will not have political men taking up these matters earnestly. I have been a member of electioneering campaigns—I will not say what party I was connected with, as party politics are excluded from this Institution—but I have been in a number of electioneering campaigns, and I have seldom heard any candidate saying a word about the greatness and glory of the United Kingdom; but all their talk was petty miserable incidents of vestrydom. The glorious destinies of their nation were absent from their minds. If politicians devoted their attention to the best interests of this Empire, we would not have so many disputes about naval and military matters, and such neglect of duty on the part of our rulers; and we should not see, in the interest of petty faction, such an absolutely necessary measure as the Military Manœuvres Act in danger of being rejected or postponed. Admiral Colomb, I think, does not give enough credit to the Army, when he says, "Money voted for the Army has rarely become Army in the face of the enemy." As a kind of adjunct, a Volunteer soldier, I would like to plead for a little more consideration for the Army. I put it to the Admiral if in point of fact, from the year 1793 up to the time of the Peninsular War, our Army was not very much in evidence in every part of the world? I am almost sorry the Admiral should have elected for his own purposes the exploits of General Whitelock, or "General Whitefeather" as he was called. Not only in South America, but also in India, in Egypt, and the Cape, and all over the world, our Army was very much in evidence from 1793 to 1808. With regard to these vast fortresses, some people, the Germans, for example, have few fortresses. The French, as the Admiral suggests, I think, have too many. I know that in the year 1882, the French had so many fortresses, that if a war had then broken out no fewer than 600,000 men would have been locked up behind stone walls. One of the speakers has referred to the case of Paris. I am not only differing from that gallant officer, but also from his quotation from Napoleon, when I say that I do not think the fortifications of Paris were an unmixed gain to France. They shut up a vast population to develop all kinds of seeds of mischief, which ultimately broke out in the Commune; and I have the authority of no less a writer than Pierron, that leading authority in France on the art of war, for holding that it might be a very good thing indeed for France if the fortifications of Paris and Lyons were dismantled, and most of the soldiers in them removed to other decisive strategic positions. I have only to congratulate myself in being able to listen to such an admirable

epitome of the philosophy of our military affairs. I think it is absurd, as well as dangerous, to go arguing whether we require an Army as well as a Navy. Any jealousy between the two Services, strikes us outsiders as being most contemptible. Both are of vital importance to us. You might as well argue which is the more important of any two things which are reciprocally inter-dependent, say, for instance, the Siamese twins; if you starved for a few days either of the Siamese twins—whom I had the honour of knowing very intimately—you very soon saw the physical decay of the other. We have frontiers to defend with soldiers, we have the command of the sea to uphold by sailors, and I trust the soldiers and sailors of the twentieth century will do as well for our descendants as the soldiers and sailors of the eighteenth did for our ancestors.

General Sir C. C. SHUTE, K.C.B. (Colonel 6th (Inniskilling) Dragoons): I have had the pleasure, at Brighton and elsewhere, of attending lectures of the gallant Admiral with the very greatest pleasure, and almost everything he has said I have very fully concurred with. With regard to our land defence, I am one of those who have spoken on the subject on more than one occasion when I was in the House of Commons. I consider one of our chief necessities is a great central arsenal. At present we have Woolwich only, in a very vulnerable position; in fact, we have too many eggs in that one basket. I am sorry to say that I had not an opportunity—in fact, I only knew half-an-hour before I came into this room that the gallant Admiral was going to lecture on this occasion—of reading the paper as I should have liked, so I have found it difficult to follow the lecturer. One thing I do disagree with him in: he finds fault with the Navy being spoken of as our First Line of Defence, while I believe, though a soldier, that it is almost our only line of defence. Is there anything in hunger? Is there anything in rebellion as the result of hunger? I tell you I am satisfied that in preference to above internal fortifications, we should have a very mobile and a very efficient, if small, Army. But pray consider if the food for our manufactures and the food for our people were even partially cut off, what the result would be. You would have, not thousands, but millions out of employ. Do you think that in these less patriotic and very democratic days, that the so-called *masses* would, without a *lawless* struggle, endure the semi-starvation to which they and their families would be subjected? No. If the food of the people be cut off in the slightest degree there would be grave trouble throughout England. Supposing, in London, that the fourpenny loaf was then at two shillings; do you think that we should be allowed to luxuriate at our West-End houses and clubs, when fathers, wives, and children in the east of London were starving, one-third of whom are foreigners, and that we should not be invaded from the east? I tell you that an army defending England, if our Navy failed us, and our supplies were cut off, would have a rebellion behind it and an enemy in front of it. I am satisfied that it is of the greatest importance in England that our Navy shall not only be equal to France and Russia, but to the three great Powers, France, Russia, and Germany combined. If there were an army of 100,000 men before London, do you suppose it would make the least difference in favour of defence as has just been argued, whether the population of London were five millions or ten millions? Indeed, the greater the population the more vulnerable they would be to an army that had cavalry worth a rap. They would cut off all their supplies. Where do you think London would be if then all our water, not drawn from the lower Thames, were cut off by the destruction of our water-works, and the City left without food or drinkable water, every road entering the great Metropolis being more or less in the hands of the enemy? In fact, I believe, myself, that our great necessity is a Navy that will prevent the possibility of our food supplies being cut off from us. I am not a naval man, but it is a known fact that an inferior squadron could prevent a far stronger from conveying an army across the sea. I do not know whether the Admiral will say I am not quite correct in that particular; but this I am certain of, that if we are all truly patriotic, whether we

are soldiers or not, we must agree that our first force is the Navy. As to jealousy, all who have, like myself, served before the enemy with the Navy as well as the Army, know that we on service love the Navy. We have always been the greatest friends, and never, as far as I have seen, has there been the slightest jealousy, except, perhaps, in a few cases, between those officers who have never seen any service at all, and are somewhat narrow-minded. I trust that I may be pardoned for troubling the meeting with these few very impromptu remarks.

Rear-Admiral C. C. P. FITZ-GERALD: I am rather in the position of not knowing what it is all about, although I have listened with considerable attention to the lecture. I cannot help thinking that if Admiral Colomb really wished to tell us that he thought some of the money spent on fortifications ought to have been spent on a mobile Army, he might (with that peculiar facility for which he is famous of putting large matters in a nutshell) have said what he had to say in somewhat fewer words. The lecture covers such a very large field, that it is impossible within the time allowed to criticise more than a very small part of it; but there is one point I should like to make a remark upon. Admiral Colomb seems to ridicule the idea "that naval war may be carried on by each side attacking the enemy's territories at the same time, when each side is in a position to fall on his enemy's flotilla and stop his attack." We must all bow to Admiral Colomb's historical researches, but I cannot think that his views on this subject are borne out by history. Surely in the cases of Colonies, and particularly the West Indian Islands, we were during the French wars attacking each other's territories backwards and forwards month after month, very frequently without having gained command of the sea. I know one case of successful attack and counter-attack occurring in practical land warfare. It occurred in the county of Sligo, and not so very long ago either; it was between the army of Dromahaire and the army of Manorbhamilton. The armies set out by different routes, and did not meet each other. Each burnt the other's castle, and carried off all the women and cattle, and returned by different routes and never met at all. Each got back to find their castles in flames, and they merely exchanged wives and cattle (I must apologise for coupling the two, but historical veracity demands it). The more I hear of these lectures, and the more I read of the prophecies in the newspapers, the more I am forced to the conclusion that we are in absolute ignorance about what will happen the next time Great Britain finds herself involved in a maritime war. We can only hope that some great genius will arise—some man with a real genius for war—and if he has such a genius, he is sure to be original, and he will do something which none of us expect, and none of us in this theatre or elsewhere have thought of.

Mr. ROBERT NIVEN: I support very strongly the remarks of the Admiral who spoke on my left in what he said about the official eye. I should be disposed to say that the official eye, or official telescope used, or supposed to be used, by the official eye, is just about one of the worst things for seeing the facts of any description which has hitherto been invented by the insanity or sanity of man. I venture to say that when a man travels, one of the first things he has to do is to throw aside his letters of introduction to officials, and look at the facts for himself. I venture to think that Admiral Colomb is strong because of his respect for the facts. I remember a remark of Carlisle, "Fact is the revelation of God"; and I remember a remark of the old philosopher Aristotle, that "he went by the facts." The Admiral has the faculty of seeing the facts, and he seems desirous of seeing the facts against his own ideas; and when he has seen all the facts, he tries to reason, and invariably does reason, accurately from them. He has presented a very broad target to the enemy—I mean the critic—and yet I venture to say that not a single missile has pierced it. A very forcible missile was launched by Sir Lintorn Simmons. I am surprised that any person listening to the paper, and not engaged mentally, with his spirit absent, and body present, with the work of concocting something which should demolish the Admiral, should tax the Admiral with having looked upon the land service and naval service apart. If

there is one feature that distinguishes this paper more than another, it is the statesmanlike grasp of the whole subject, the dealing with each branch of the Services in such a way that an impartial person could not tell which branch of the Service the Admiral belonged to himself. There was one remark made by a gentleman about having a Navy equal to the Navy of three other Powers. I think it was Sir Charles Shute, and I entirely agree with what he said. One remark, however, I cannot agree with. He also fell foul of the Admiral for using the expression "the First Line of Defence." What the Admiral said was that that expression employed in the paper, and with which he did not saddle the Army, or any class of people at all, was a misleading expression—an expression which when you look at the facts of our Empire, both the heart of our Empire and our external dependencies, he just ran his gimlet through. Another remark coming from Sir Lintorn Simmons was what he said as to the difficulty being one of expense. Now here, if I may with all respect say so, I differ a little, not with what the Admiral said, but from what one would infer as to his attitude. It is very natural that anyone in this country—where, so much the worse for us, we are governed by a Democracy, the most hateful of all things—should say his schemes do not involve an increased expenditure; and I venture to think it comes to that, namely, that he said it could not involve an increased expenditure. I think the best thing, to use a vulgar expression, is to take the bull by the horns, and say that our schemes do involve an increased expenditure. We do not conceal that from you. We have more money than our fathers ever had, ten times more, and if they expended their blood, and expended a greater proportion than we do now, we do not deserve to have a country at all if we are not prepared, as I have said before, to have a fleet that is equal to the fleet of three other Powers. That I do not say in a bellicose or Jingo spirit—not for one moment—but everyone, unless he is, like the old Carthaginians, satisfied to have his country wiped out, must be prepared, if not to contribute his blood, yet to contribute his money. Sir Lintorn Simmons also said, "Do not detach squadrons too much"; the Admiral did not suggest the detaching of squadrons too much. What he points out is that, considering the kind of Empire that we have, although you will naturally concentrate your focus round the heart of your Empire—the British Islands—still you have to consider that you have Australian, American, and African Colonies. And here I come to an important point, and that is, that we must say to the Australians and to the colonists generally, kindly but firmly, "You have not done what you might have done, and what you ought to have done in the way of raising forces and ships to defend yourselves, and contributing to the general expenses of the Empire," and we should send men to the House of Commons who would take that ground. There was one point which was not quite clear to me in the Admiral's paper. Perhaps he will explain what he means by *temporary* and *particular*. He says, quoting from an essay written more than a hundred years ago, "The invasion of a country like Great Britain, of an insular situation, and very considerable extent defended by a powerful fleet and army, either with temporary or particular views"; and I do not understand the distinction between "temporary" views and "particular" views. I hope that something may be done in the way of educating the people of this country, in the way Dr. Maguire spoke of, as to Admiral Colomb's views.

Vice-Admiral COLOMB, in reply, said: I think, as the hour is so late, that I had better shorten my remarks, the more so as the general feeling of the audience must be, and yours also, my lord, that I have not a great deal to answer. I must express my special thanks to Sir Lintorn Simmons for coming here to-day and taking a lead in the discussion when his health was so weak, and I am sure we all feel that what he has said has been the most important part either of paper or discussion. Yet I do not think that he fully understood the nature of my position, though he accepted my general conclusion. When we have Sir Lintorn Simmons's opinion on the general question so clearly expressed, I am bound to say that it has

been worth while reading the paper in order to get it. Captain James is a good deal more in agreement with me now than he was at first. That is the advantage of discussing these things. There we have again one of my objects fulfilled. I do not go with him in the desire to substitute the terms "wise" and "foolish" for the terms that I used. I think the words "instinctive" and "reasoned" are quite strong enough expressions without going so far as to say that one system is "wise" and the other system "foolish." I can only ask Mr. Lawrence Swinburne to go still more closely into the position of the admiral in view of undefended places behind him, and the possibilities of attack. The historical facts show that the admiral must attack his enemy if he can get at him, and that there is no excuse for his not attacking, because he thinks that something else may happen behind his back. Sir Henry Smyth concurred with the abstract principles, but thought that we wanted to be more careful in guarding the heart of the Empire. I am entirely with him in that. My point is, that the heart of the Empire is more effectively guarded by the mobile forces both by land and by sea than it can possibly be by immobile forces of any kind. Admiral Close spoke with his usual force, but I do not know that there is any point that I have to answer there. I am very much obliged to Dr. Maguire for the flattering way in which he was good enough to speak of my labours in these directions. One does one's little best, and that is all that need be said about it. I go with him, that when I speak of the constant smallness of the army in the face of the enemy I do not deny that it has been in evidence; I thought I put it quite clearly that it was tremendously in evidence, but always with that curious condition that it was very inferior in force when it came to face the enemy, which was not always explained by the fact of its facing the enemy at so many different points. A great deal of it was retained always where it was not necessary, but it was more necessary to retain it in those localities in the old days with the uncertainties of the wind than it now is with the certainties of steam. Sir Charles Shute was good enough to agree generally with what I said, and I do not think offered any points that I need remark upon. My good friend Admiral Fitzgerald was not so incisive and humorous as usual. But his summing-up of the statement that we do not know anything about the question, and we are in absolute ignorance, is a fitting close to his speech. I do not know whether he goes further and says that because we do not know anything about it, therefore, we had better do nothing. He left us in the position of supposing that that was the argument he wanted us to follow. I am obliged to Mr. Niven for his remarks, and I have to thank the audience very much for the close attention with which they have listened to the reading of the paper.

The CHAIRMAN (Earl Cowper): It only remains for me to say a very few words. In the first place, I have to thank, on your behalf as well as my own, Admiral Colomb for his most able and interesting paper. I think that everybody who has looked carefully at it—and it is necessary to do that in order to take it thoroughly in—will feel that there is an immense amount condensed into a very small space. A great deal of very useful and interesting information is contained in that part which unfortunately time would not permit the author to read: I mean the notes, which contained proofs of many of the assertions in the paper. There is no doubt that we have had a very interesting discussion. This is a most enormous subject, one which would occupy many days of debate in the House of Commons before it could be beaten out thoroughly. We have only really lightly touched upon it here, for nothing like an exhaustive discussion has taken place. One or two points struck me very much. First of all, the necessity of combined action between the Navy and Army, and a closer understanding between the two, and some regular system by which, in time of war, the two Services should be prepared for a common operation. When the present Government was formed, I remember one of the excuses for putting so important a member of it, the Duke of Devonshire, in such a comparatively obscure place as that of President of the Council, which

has generally come to be considered as rather an ornamental department than a practical one, was that his energies would be largely devoted to being chairman or president of a Committee on Defence, which was to do exactly what we want, and to formulate some scheme in which the Navy and Army could co-operate and be more closely bound together. I do not know how far this has been carried out, but the public has heard nothing of it. I only hope something has been done in private, or I hope that something will be done, and that the leading men at the War Office and at the Admiralty will be appointed in order to assist the Duke. I cannot help thinking, in spite of something that has been said about a commission, that the gentlemen at present managing these two Services would be the best men to appear on this Committee of Defence. They are the best men of the two Services, or are supposed to be, or else they would not be picked out for the purpose. If they are not the best men, the sooner they are changed the better. We will take it that they are on the whole as good men as any that can be found to represent these Services. Unfortunately, in all these subjects we come at once upon the difficulty of expense. Everybody, it seems to me, is anxious to improve some one part of the general system, but do not wish, if they can help it, to draw away any money from other parts. I am afraid, however, that we can never hope more money will be spent on the two Services than is spent now. There is a great wave of public feeling at this moment which has enabled the Government to ask a much larger sum of money than usual, but I am afraid we cannot count on that being kept up. We must take it for granted, whether we wish it or not, that we shall never have a larger grant than we have this year, and that anything done in one direction must be at the expense of some other, and money must be taken for the increase of one part from the other part. The main subject of Admiral Colomb's lecture was, I think, that we must have a better mobile army than we have. In order to obtain that, he thinks we may be able to reduce our garrisons and to put a larger army into the field. Of course, he never pretended that we should do without garrisons altogether; what, I think, he means is that some places are garrisoned which need not be garrisoned, and in others a larger garrison is kept than is necessary for the purpose, which, of course must be only to delay the enemy until the mobile force, of whatever kind it is, can come up to its assistance. This is a matter which, I think, he has very carefully argued, and which I do not think anybody has said much to disprove. Sir Lintorn Simmons naturally wishes that our garrisons should not be reduced, but if we do not reduce our garrisons we cannot increase our mobile army. We must choose between the two. One of the most consoling things, to me at any rate, in the paper is the way in which it is most clearly set out that whatever enemy we have to contend with, the idea of an invasion of our shores is practically almost in these days impossible. This I only hope may be the case. Of course, the great danger people fear now, and what is much more serious now than it was in the time of the late war, is the danger that we may be reduced to starvation. A hundred years ago, during the late war, we were practically a self-supporting nation. Now, I believe five parts out of every six of the food comes from abroad. If we cannot keep the sea open for any appreciable time we shall simply be starved, and have to surrender. I hope and trust there is no chance of our being reduced to this extremity, and certainly the remarks made by Admiral Colomb, with regard to the increased facility of keeping open our ports, in the immediate neighbourhood of which the greatest number of captures would be most likely to be made, is most consoling. It would be easier now, with telegraphs and other things, to keep our ports open for commerce than it was before. I did not intend to say so much when I got up, but I will say no more now, and only conclude by thanking Admiral Colomb for his paper.

ON PISTOLS.

By Lieut.-Colonel G. V. FOSBERY, V.C., late Bengal Staff Corps.

Wednesday, May 13th, 1896.

Colonel LONSDALE A. HALE, late Royal Engineers,
in the Chair.

The CHAIRMAN : I have to introduce you this afternoon to Colonel Fosbery, who is kindly about to give us a lecture on "Pistols." Colonel Fosbery is one who, in the past, has rendered great service to the Institution by bringing forward the question of machine guns when they were supposed to be merely a fad and nothing more. Colonel Fosbery has now undertaken to bring us up to date on that most important weapon the pistol.

LECTURE.

BEFORE commencing to treat of the modern weapons, with which during the present lecture we shall be mainly concerned, I propose saying a few words regarding the origin of the pistol and its earlier uses, and tracing, so far as it is now possible to do, its genealogy from the primitive arms of 300 years ago down to the Colt, the Webley, and the Smith-Wesson of to-day. I trust that you will consider such a sketch as being not entirely out of place, and as having sufficient interest to obtain for me your forbearance during the time I shall employ for the purpose. I fear I shall also have to ask pardon for the somewhat discursive way in which I have treated some parts of my subject—a fault, however, which its very nature has made it difficult to avoid.

Should you think that I have devoted too much space to Colonel Colt and his interchangeable work, I must say in excuse, first, that the word Colt stands for pistol all over the world, and that, secondly, the system of manufacture which he introduced into England has governed the production of military fire-arms, rifles and pistols alike, from 1851 to the present hour.

The pistol was, doubtless, produced in its earliest form at some period between the years 1446, when the hand-gun is known to have been made in two sizes, and 1509, when the match-lock was first adapted to portable fire-arms. Some say that it was invented by an Italian named Camillo Vitelli, made at Pistoia, and called after that city; others again assert that, on the contrary, it was made at Perugia, and so named from Pistello (a pommel); while a third authority says it was called from the Pistole, which coin just fitted its calibre. Anyhow, it is certain that

the hand-guns, large and small, were succeeded by the hackbut and demihague, and these again by the harquebus and pistol, and it seems more probable that it was made to meet the necessity of having something lighter and more manageable than the match-lock proper, which was cumbrous and unwieldy, required a rest to support it when in use, and oftentimes two men for its service—a fire-arm, moreover, which could be used by the mounted man against the foot soldier (who now began to carry the heavier gun). To attach a light barrel and lock to a stock modelled on that of the cross-bow with which all were familiar required no great power of invention, and it probably further received its modifications and improvements at the hands of the many armourers who, once it became a recognised weapon of war, engaged in its manufacture. Nor did it come a moment too soon to the aid of the mail-clad horseman, who, after having had for ages everything his own way, suddenly awoke at this period to find his superiority rudely contested by the very classes he had been taught to despise, and make light of. The pike, the cloth-yard shaft, and the quarrel, had been unable alike to pierce his armour of proof, while his lance, his sword, and his battle-axe made fearful havoc among the iron caps and leather jerkins; and although he carried no projectile weapon, and could hurt nothing he could not reach with the point of his lance, he still had many striking advantages over the man on foot, who, at close quarters, was apt to fare badly at his hands. Now, however, had come a time when the match-lock was to sweep the field with bullets no armour could withstand, and the knights go down before the muskets of the common soldiers.

This was the beginning of an entire revolution in the state of things as they then existed, brought about by the invention of gunpowder and of the portable weapons now made for its use; initiated, it is true, in the field, but one which was later on to bring about changes in our social relationships, the effects of which have lasted till the present hour. These were, however, not foreseen at the time, but it was quickly felt by the knights that their relative fighting value was being imperilled by “villainous saltpetre,” and the sharp struggle for the maintenance of their position which followed, took at first the form of a “battle of the guns,” in which heavier pieces and thicker armour were brought into the field, until came the misfortune of those Italian knights, who, being unhorsed and unable to rise without assistance, were broken open and despatched with axes by a party of woodcutters. Then men began to perceive that neither they nor their horses could be made bullet-proof and remain effective.

Defensive armour was now, therefore, abandoned, reluctantly, it is true, and piece by piece, until nothing remained of it but the cuirasses and helmets of the heavy cavalry, the gorgets which long survived in France, and the scales and epaulets of our own foot regiments, which often saved the wearers from an ugly sabre cut.

Another and a better reply to the match-lock in the hands of the foot soldiers was obviously to put pistols into those of the knights and nobles, and for a long time the higher orders from whose ranks came the mounted

men were thus provided, the match-lock being carried by the yeomen and peasantry who formed the bulk of the foot.

In this connection, it is curious to see the early specimens of both weapons in the Tower of London, the Art Gallery in Birmingham, the Musée d'Artillerie in Paris, or here, in our own collection, where the rough stocks and want of finish in the military match-lock stand in striking contrast to the inlaying and engraving, the beautiful workmanship and lavish adornment of the pistol.

Partly for this reason, too, in the first hundred and fifty years of its existence, there are, we find, striking proofs of the expenditure of a vast amount of labour and skill in the improvement and development of the smaller weapon.

For consider how much these were needed. Until the introduction of the wheel-lock, a coil of burning match must have been an intolerable portion of a horseman's equipage, and even when this was abolished, imagine the processes he had to go through—Crusoe, in 1632, as quoted by Lord Dillon, says they were sixteen in number—and when, lastly, he pulled the trigger the chances must have been about even whether he got a single shot at his enemy or had a miss-fire. As Crusoe directs that the pistol should be fired lock uppermost, we see the reason for the absence of sights on the early pistols, and why also he wished the barrel to be in contact with the enemy when possible.¹ His reason for firing lock up was, of course, in order to ensure contact between the powder in the pan and that in the barrel.

To do all this on foot would be a long and tedious business, but imagine doing it on a restive horse in a high wind, and in rapid motion either in advance or retreat. What wonder, then, that so much should have been done to better these conditions in the direction of a more certain mode of ignition, but more especially in the attempt to get more shots out of a single weapon without the necessity of re-loading, and so render it more effective.

Thus, ever since the first invention of fire-arms many attempts have also been made to combine short pistol barrels with other weapons, offensive and defensive, so that instead of hurling the empty pistol at your enemy's head, as nowadays a man is sometimes compelled to do, you might break his skull, stab him, cut him down, or otherwise abolish him with the battle-axe, dagger, or sword to which the barrel is attached. Of these weapons there are many in the Tower; and how curious and ingenious some of them are, is well shown in these sketches of Lord Dillon's. One in particular, a battle-axe, has a hinged edge, which, being turned down, uncovers five barrels placed in the head of the axe and pointing towards the edge, while the handle forms a sixth. On one side of the head is a matchlock, on the other a wheel-lock, and the others have covered pans and touch-holes and were fired with a match by hand. We have steel bucklers with a pistol barrel projecting from the central boss, a grated window for taking aim is placed above it, with the neces-

¹ Crusoe's "Military Instructions for the Cavallerie," 1632.

sary apparatus for loading and firing it inside; some of these formed a portion of the armoury of Edward VI.

Similar ideas have even come down to more modern times. I once saw at Marseilles a revolver having eighteen chambers, fired by the pull of the trigger, the barrel being bored out in the back of a broad polished blade nearly a foot long, with which any amount of killing might be perpetrated; a weapon, in fact, the mere sight of which in the hands of one's enemy might well cause anxiety and reflection.

Later still, we come to the infantry swords of Italian make, which carried a set of chambers in the hilt and a barrel along the back of the blade; so that if you fail to make good your point you still can pull the trigger with the best results.

Nor did the old armourers neglect the pistol proper. Accordingly, in the Tower Collection, and again, and more especially in that at Birmingham, we see various modifications of the lock, on which infinite pains were bestowed. What many of these were, and how and in what order they were developed, is admirably set forth in an exhaustive paper contributed by Lord Dillon to the *Archæological Journal* (Vol. I., p. 115), these illustrations which he has most kindly placed at my disposal were made by him from gun and pistol locks now in the Armoury at the Tower, they well show the ingenuity and beauty of these early combinations, and trace the gunlock from the detent of the cross-bow down to its latest forms. Side by side with the elaborate pains taken with the locks as here illustrated, we find the persistent effort to increase the power of the weapon by getting more shots out of it. In the first of these we have a double-barrelled pistol, the barrels being placed one above the other (as has been frequently done since), that the weapon may be carried more conveniently on the body. Then one having a single barrel, but three locks and vents communicating with them in different positions, one in front of the other. The intention being that three charges should be put in and fired successively, beginning, of course, with that next the muzzle.

Notwithstanding that two leather wads were placed between each, this was a most dangerous arrangement; and yet, extraordinary as it may appear, I have seen—and that well on in the nineteenth century—a rifle built on the same principle having four or five nipples and a sliding lock intended to fire the charges in succession.

Next we have a four-barrelled pistol, the prototype of the English pepper-box pistol of fifty years ago, and not distantly connected, except as regards ignition, with the Brandlein or Lancaster pistols of to-day. Lastly, we have the original ancestor of the modern revolver, consisting of six chambers formed in a revolving cylinder, capable of being brought successively by hand into line with the single barrel of the weapon, and of firing their charges through the same. This, however, is not even yet the nearest approach to what the experts of that day were in search of, for, lastly, here in our own Museum, we have a pistol—which I am about to show you to-day—in which the cylinder is no longer rotated by hand, but by means of the hammer, the most perfect weapon, in all res-

pects, so far as I know, made in the early days to which it belongs—viz., the reign of Charles I.

This plan of rotating the cylinders was, till lately, believed to have been the original invention of Colonel Colt. I do not say for a moment that he took the idea from hence. In those days there were no Patent Office journals, no catalogues of ideas and inventions, and no such royal road to the history of any and every subject as is now obtainable, ready printed, in the Patent Offices of London and Washington. Each man had to thrash out his ideas for himself, and evolve his fire-arms from the depths of his own moral consciousness, aided by such stray hints as he could pick up from arms already existing, but stored away in collections widely distributed, and often difficult of access. So that it would be rash, and probably unjust, to hold him guilty of plagiarism.

The revolver, then, as we have seen, existed, in one shape or another, in very early times; and yet neither as a military weapon nor as one for personal defence did it render any real service. We find it in the Museums, constructed to be fired by the match, by the wheel-lock, and by the flint. But there it remained in the shape of isolated examples, specimen arms and no more; for notwithstanding the vast amount of labour, skill, and ingenuity bestowed on the early fire-arms, men seem to have been unable to carry this particular idea to any really practical conclusion.

Now, a portable weapon out of which six or seven shots could be fired without reloading, offered so many advantages that, but for some very serious obstacle which the earlier makers were unable to overcome, it must surely have been brought into general use, especially for mounted men. We shall not be wrong, I think, in saying the difficulty was that of ignition, and that it was not until Mr. Forsyth had invented the percussion system that a really useful revolver became possible; though it was perhaps not so much the *ignition* as the difficulty of *isolating* the *ignition*. It is clear that with a revolver any failure here must have been disastrous.

Even after that time the caps of the early revolvers often clogged the cylinders, and until the gas-tight cartridge carrying its own ignition appeared, the revolver came short of being what it now is, the most formidable weapon in existence for close combat, and the most valuable for personal portection.

While then the revolving principle awaited the coming of the percussion lock, the pistol proper, either as a single or double weapon, was developed and improved in many ways, until it gradually assumed the outlines with which we are now familiar, and became a really powerful military weapon. To return to early days. The match-lock was invented about the year 1509, and soon applied to it.

Its original stock, as we have seen, was copied from that of the cross-bow, and, like that of the small hand-gun, was straight, and only assumed its present form (in which it stands, nearly at right angles to the barrel) by slow degrees, the change, no doubt, proceeding from the way

in which it was used. The hand-gun, as we see from old prints, was fired at a high angle, a sort of mortar practice in fact, which, when conducted on horseback, must have made it anything but an arm of precision. As the weapon was improved, it became necessary to bring the barrel more and more into the horizontal line, and the stock, therefore, became more and more bent to suit the new conditions, but it was long before sights were added, or its shooting brought to any reasonable degree of certainty.

After the match-lock, the pistol long carried the wheel-lock, and in 1544, being now called a dag, was carried by some of the English horse, and the tendency was to shorten and lighten the weapon. But with this Henry VIII. interfered, and, forbidding the use of cross-bows altogether, and of dags and pistols of less than a yard in length, set himself to improve the national archery by edict. He enforced practice with the long-bow, which was then beginning to be somewhat neglected, and though we find in the Tower two guns said to have belonged to him, we gather that he put no great confidence in powder and ball, at all events for military purposes.

In his son's time, however, pistols were gradually introduced into the cavalry, who carried one each. Queen Mary in no way encouraged the use of fire-arms. But Queen Elizabeth, on the contrary, legislated in their favour, and gave a second pistol to her horsemen. From this moment they began to be more generally employed. In Charles I.'s time the flint-lock was invented and applied to them, and in James II.'s they were in the hands of all the Dragoons.

From this time pistols were modified slightly as to length and calibre, some for military use being made to carry the musket ball and so simplify the ammunition question, but beyond minor changes they show but little alteration from the time of William III. down to the early part of the present reign.

As has been the case with other weapons, the introduction of the pistol in large numbers brought about special formations for their use—and we learn that at the Battle of Renty, fought in 1544, the German Ritters, so armed, abandoned their customary plan of charging in single line with intervals of five paces between the horses, and substituted for it a deep column which advanced until within pistol-shot of the enemy. The front rank then fired, and the troopers wheeling outwards, galloped round the flanks and formed up in rear to reload, much as we conduct our street-firing.

While our flanks, however, would be protected by walls and houses, the German, with an empty pistol, had to draw his sword to protect himself and his comrades on his way to the rear.

Nevertheless, the first effect of the movement was greatly to astonish the French, who soon after adopted it, calling it the *Carambole* or *Limaçon*.

Duelling, no doubt, brought in many improvements in such pistols as were made for that purpose, and indirectly benefited them all round. Their locks were brought to the highest pitch of perfection, sights and hair triggers were added, until at twenty paces as good shooting could be made with a Nock or a Manton as is done to-day with the best revolver.

The saw handle gave a perfect grip, and as the barrels were heavy and the charges light, there was, when the pistols were properly loaded, none of the throw-up which nowadays calls for special allowance in aiming, or the exaggerated fore-sights which disfigure our modern revolvers.

With those weapons an expert would hit a half-crown thrown into the air, pip playing cards, or snuff candles at twelve paces, and, in fact, do as well as can be done by anything made since.

Collier, by birth, I believe, an American, but who settled in this country, was, so far as I know, the next to take up the question of revolving rifles and pistols.

This pistol made by him, taken from our own Museum, shows what he had accomplished in 1810. Had he added the pawl to rotate his cylinders as was done more than 100 years before him, and borrowed the self-priming flint-lock already produced by some unknown inventor, we see how near he might have come to success and fortune.

He even attempted to seal the joint between the chambers and barrels by a forward motion of the former, as has been done by several others since, and notably by Henri Pieper in our own days, none of whom seem to have realised the fact that in an accurately made pistol only a very small portion of powder gas can possibly escape between chamber and barrel, and this remains constant, now that the relative positions of chambers and barrel are fixed by the introduction of the solid frame, as when the barrel was keyed on to the spindle, the parts would spring and increase the escape. Now we can add a grain or two of powder to counterbalance the loss, and our velocities remain uniform, and our shooting regular, as is easily proved by the targets we are able to make.

After Collier's time, the revolver remained stationary until 1830 or thereabouts, when Colonel Samuel Colt took up the question, patenting a set of barrels rotated round a spindle by the action of raising a hammer, adding, of course, a percussion lock. This again in 1835 he improved, putting in a set of chambers brought one by one into line with a single barrel by the same means.

Everything here seems to have been already known and used. His pistol was a combination rather than an invention, but so ably combined, as to have been worth any number of absolute novelties.

Besides which, I think we may safely assert that it was Colt's indomitable pluck, his sound sense and marvellous business capacities, that even more than all his inventive talent enabled him to create a factory of colossal size at Hartford, for the manufacture of his pistols, and flood with them the whole of America, North and South, besides a great part of Europe and Asia, while they and their inventor's name are famous throughout the known world.

I was told by a person certain to be well informed that the Hartford factory had turned out and sold over 800,000 pistols of one pattern alone. Their total out-turn, therefore, since they first commenced work must have been something prodigious, and when I visited the factory in 1885-6 the immense shops seemed fully employed.

I may here mention that a curious reason exists for the smallness of the bore of the earlier American revolvers. As they were intended for the use of hunters and Indian fighters, who only visited the settlements at long intervals, the calibre was kept down to enable the man to carry enough lead about his person to last him for a long time. The same remark applies to the Kentucky rifle.

Had what I have above mentioned been Colonel Colt's only performance, it would have been a most remarkable achievement. But he was, I believe, the first to introduce and bring to perfection the interchangeable system in the manufacture of arms.

This had, it is true, been proposed to the United States War Department as early as the year 1827 by one John Hall, who was then engaged in making breech-loading rifles of his own invention for the American Government.

In his letters to the Department he describes his plan as one by which, if 1,000 guns were taken apart and their components thrown into a heap, 1,000 other guns could be reconstructed from that heap. How far he could have accomplished this with the machines then known may be matter for conjecture. Mr. Gardner, the inventor of the Gardner gun, put it to me even more tersely. He said, pointing to a heap of components, "See here; these things spell g-u-n, gun!"

John Hall went on to say that the introduction of his plan meant heavy preliminary expenses, but promised large future advantages. He offered to carry it out if the Government would give him a sufficient contract.

We learn that his rifles, to the number of about 2,000, were issued to the troops, and used to good effect in the Indian wars; but whether or not his method of manufacture was carried into practice I have no means of ascertaining.

Colonel Colt, however, we know, adopted it, and brought it to great perfection. About the year 1851 he showed his machinery in this country, and exhibited its performances to our own Government officials, by whom it was finally adopted.

We find, however, that it was not until 1860 that the Army was furnished with interchangeable weapons.

Notwithstanding this, the interchangeable system in its entirety has not, even yet, taken root kindly in the soil of the United Kingdom, one consequence being that the manufacture of arms of which we were in old times justly proud has languished or passed into the hands of strangers, so that nowadays it is no uncommon thing to see an English sportsman carrying a Mannlicher or a Winchester, instead of a Purdey or Holland. True, the foreign machine-made guns are cheap; but why should we not make such ourselves? Can it be that some of our manufacturers, unwilling to incur the first cost of the change, have been left behind in the race? or, again, that there is still existing amongst us some of that jealousy of machinery, which, in old times, caused men to burn the spinning-jenny and break up the power loom? An admirable letter in a late number of the *Field* to which my attention has been drawn since

this paper went to press, discussed this question in detail better than I could do, and with much force and truth.

Of course, in saying this, I exclude those great firms and companies in this country who are thoroughly abreast of all the progress of the age, and who are able to turn out as fine interchangeable work as is made in any part of the world.

Our Service revolvers, for instance, as made by Messrs. Webley, of Birmingham, in which every part of importance is finished to the two-thousandth part of an inch by elaborate self-acting machinery, cannot be beaten by any similar weapons in Europe or America.

While the pistol was being constantly improved, if not always for military purposes, the musket remained nearly *in statu quo* from the introduction of the flint—some time in the early part of the seventeenth century—to 1842, when the percussion lock finally took its place. Nor was much done with it until the time of the Crimean War, since which time—and much encouraged by the rapidity of change rendered possible by Colt's introduction of machinery—a period of feverish activity in the matter of military fire-arms has set in, till no man can say to-day that the discovery of a new explosive, the invention of a better projectile, or the bringing to perfection of machine guns of longer range and greater power, may not start anew all the nations of the world in the race after some impossible finality in the matter of armaments.

After Colt's time, and more especially in England, there quickly sprang up a host of revolvers of every possible size and calibre, all sorts of actions, and having a hundred-and-one variations in construction, most of them of but little practical value; these it would be out of place here, even to enumerate. There are, however, certain striking improvements which have brought us to the specimen pistols you see here to-day. These are without arrangement in order of time, and as nearly as I can remember them:—The introduction of the solid frame; adaptation to the gas-tight metal cartridge, carrying its own ignition; the double trigger; the double action with single trigger; extraction by forward motion of cylinders; extraction by side motion of cylinders; extraction by breaking down the frame; Mauser's ingenious rotation of the cylinders by inclined grooves. To which we should add the lock now applied to the Service pistol by Messrs. Webley, which is a triumph of ingenuity and efficiency. This, with their anti-frictional bearings for the cylinders, has raised their pistols into the very first rank. And, though made by machinery, the locks and actions work as smoothly as those of first-class double guns.

Out of all these different systems and modifications, introduced by a host of inventors whose names are now forgotten, stand prominently forward the pistols of a few years ago, which first really disputed the field with Colt. Of these the most noteworthy are:—That of Tranter, whose work on the revolver must never be forgotten; the Deane and Adams, the Nagant, the Enfield pistol, the Smith-Wesson, the Webley, and some few others. Of these, by a process of natural selection, most have fallen out of line, and we may almost say that outside of the city of Liège and the arsenals of certain Governments there exist but three

pistols of the first rank, as to principle, material, manufacture, and efficiency. These are the Webley of the English Naval and Military Services; the Smith-Wesson adopted by Russia; and the Colt, to be seen everywhere where these others have not driven it out of the field.

In these three pistols are to be found, in more or less perfection, all the qualities which Mr. Walsh¹ desires to see in a first-class revolver. To wit: rapidity of fire, accuracy, quick sighting, safety, facility of cleaning, and endurance. As any well-made pistol will, with care, last a man's lifetime, we may, I think, leave out endurance. And we have remaining five essential conditions, without any one of which the pistol would lose much of its efficiency. With these five qualities, however, Mr. Walsh associates length of range, penetration, and stopping power. Now, though he clearly states that penetration and stopping power are two different things, he does not tell us how the two first are to be successfully combined with the third—a matter of no little difficulty. But as this last is the paramount necessity of a military pistol, without which all the other qualities named, however much it may possess them, ought barely to save it from the rubbish heap, it is, therefore, one to the consideration of which we must devote some attention later on.

Having thus far followed the pistol through its many transformations, from the horseman's dag of the fifteenth century to the revolver of to-day, I will now proceed to consider its place amongst military weapons and its most effective sphere of action.

On many grounds there seems to be good reason for associating the pistol with the lance and sword, rather than with the musket or carbine. For while the latter are for the most part employed at considerable distances, and at groups rather than individuals, the pistol is essentially a weapon of close conflict, and one with which an antagonist must be singled out as much as is the case with the lance or the small sword.

In my opinion, it should never be used beyond twenty yards save under most exceptional circumstances, and rarely beyond twelve, and this no matter how skilful may be the marksman who stands behind it. In attack a man should use it to clear his own immediate front; in defence, to rid himself of those who press upon him most closely.

For these purposes, in the first place, a single shot from the pistol should, like the thrust of a small sword, be in most cases decisive; and, secondly, no chance of making it so, should ever be thrown away by a careless or premature use of the weapon.

Indeed, an old friend of mine has proposed the following rule for its employment. He says, press the muzzle of the pistol lightly against the enemy's waistcoat and then pull the trigger. Very sound advice, not that we could often follow it out, but because the attempt to do so will always bring us close enough to make certain of our shot being effective.

¹ The late Editor of the *Field*.

A pistol is not carried that we may be able to do fancy shooting at the ranges of the carbine, as I have seen done by Herr Shuloff and others, but that at close quarters in the crowded *mêlée*, and within the limits of a few yards, we may be able to strike down one or more men by the calm deliberate use of a special weapon, created we may say, in the main, for circumstances such as these.

But in order to serve us here our pistol must possess certain qualities, the two principal ones being: firstly, accuracy at its own ranges; secondly, the power to stop any foe, whether civilised or uncivilised, almost wherever you may happen to hit him.

The man who threatens to make a lead-mine of you in case you hurt his feelings, can have but little confidence in the effect of a single shot.

It would manifestly be better to carry a large bored three-barrelled weapon, every shot of which must, from its size and weight, be effective, than a six-chambered pistol, from which you may have to fire two shots for every man killed or disabled.

Nevertheless, while almost every pistol is made sufficiently accurate to shoot well at distances at which it would be folly to use it, *stopping power* is, I fear, sadly neglected in almost all with which I am acquainted, whether Belgian, English, or American, always excepting the Colt's Frontier Pistol carrying the cartridge of the Winchester Repeater. As, however, if only the bore is large enough, this power can be conferred by the use of a properly constructed bullet, and a charge of powder calculated rather for this purpose than for range and penetration, the fault can be remedied.

This power, as I shall presently show, is far more needed in uncivilised than civilised warfare, and it is, therefore, more important that our weapons should possess it than those of other nations, who have far less to do with fighting savages than ourselves.

With the civilised man, who knows to a nicety the locality of his principal organs and something of the effects that the presence of foreign bodies in his interior may be expected to produce, a comparatively slight wound (surgically considered) will often suffice to set him thinking of his spiritual condition or his other personal interests, rather than of the business in which he may be engaged. Thus, a comparatively feeble weapon may often be used against him with good effect. But when we are fighting the Ghasi, the Zulu, or the Arab of the Soudan, the case is very different. Any one of these will make his rush, having his mind fully made up to kill you, or to be killed by you, and one of these two things he will get done without *arrière-pensée* of any kind, and he knows as little about his own inside as a tiger does. As in the case of that beast also, when he makes his attack upon you a personal one, you must be prepared to stop him or die.

Nor will anything avail you here but the power of delivering such a blow as will physically cripple or disable him. How true this is, is well illustrated by a case which occurred in one of the actions fought during the Indian Mutiny.

An officer, who especially prided himself on his pistol-shooting, was attacked by a stalwart mutineer armed with a heavy sword. The officer, unfortunately for himself, carried a Colt's Navy Pistol, which, as you may remember, was of small calibre, fired a sharp-pointed picket bullet of sixty to the pound and a heavy charge of powder, its range being at least 600 yards, as I have frequently proved. This he proceeded to empty into the sepoy as he advanced, but having done so he waited just one second too long to see the effect of his shooting, and was cloven to the teeth by his antagonist, who then dropped down and died beside him.

My informant, who witnessed the affair, told me that five out of the six bullets had struck the sepoy close together in the chest, and had all passed through him and out at his back.

Here, then, was an accurate weapon used with deliberation and skill, having long range and great penetration, and all to no purpose. The enemy was killed, it is true, but not *stopped* until he had been able to inflict a fatal wound on his slayer.

Now, there are two ways in which a man may be stopped, even supposing him not to be hit in what is called a vital spot like the heart or head. Of these one is what is often, for want of a better term, called the *explosive* effect of an express bullet. I do not mean by this the mischief done by the breaking up of a soft lead hollow-headed projectile, but that caused by the passage of a bullet which is in itself no way deformed by the process, but which has a velocity of not less than 1,700 to 2,000 feet per second. Such a bullet will leave a barely perceptible puncture at its place of entrance, but a comparatively huge hole at its point of exit, causing such a wound as will stop almost anything.

This action, which is confined to bullets having velocities such as I have above named, is to be explained by the fact that the speed of the bullet gives no time for the materials lying in its path to be pushed to one side or the other, and so allow of its passage. They therefore become heaped up in front of it, and driven out before it in a mass, much like the water forming the bow wave of a ship at high speed.

The same vessel at a lower rate of steaming will slip through the sea, causing scarcely a ripple on its surface. In like manner our small-bore projectiles at moderate speeds will pass through a man's body without disturbing his tissues to any fatal, or oftentimes to any inconvenient, extent, as witness many an episode at Chitral and thereabouts.

Very wisely, for this reason, the '303 was not sent against the Ashantees, who would have made still lighter of the wounds it inflicts at ranges beyond the explosive limit, than did the Pathans. And though it will, no doubt, answer well enough against a civilised enemy, for reasons already given, it will probably not be too much relied upon when next we have to deal with savages.

Before leaving the subject of the '303, I may add that it is now found that at extreme ranges there is a second dangerous zone where very severe wounds are inflicted. This is probably to be accounted for by the extremely rapid rotation with which these bullets are endowed, and which, on the descending curve of the trajectory, maintains their axes in a

direction parallel to that of the barrels from whence they came. They thus strike side downwards and key-hole in the body of the recipient, instead of perforating it.

The really effective stopping power of the .303 bullet is therefore, in a measure, confined to two portions of its flight, the first and the last, at one of which only, viz., the first, is it really needful it should possess it.

As this power exerted in this place is purely a question of extreme speed, a moment's consideration will show us that we can never hope so to stop with a pistol constructed and used as is ours. Even could the explosives necessary to produce these extreme velocities be stored up in our pistol cartridges, the best men would be unable to stand the recoil they would set up.

With the Service pistol and our present charges of powder, while we have a heavy recoil, we get an initial velocity of no more than 700 feet per second, to which we should have to add at least another 1,000 feet in order to obtain the explosive effects before mentioned.

We may, therefore, at once abandon this idea, and turn to what will offer a better chance of success. There is, it appears to me, only one such plan available, which is to cause such a shock to our enemy's system as will cause him to defer his attack till some other opportunity.

In order to give this shock we must increase by every means in our power the blow to be struck by our bullet in the first instance, and see that he gets the full benefit of it in the second.

It is clear that if we put enough powder into our pistol to drive the bullet clean through a man, and a long way out into the country behind him, we are wasting all the energy necessary to take that bullet through his skin for the second time, and to that distance also, whatever it may be, whereas evidently the bullet should remain in him, and the energy wholly wasted in the former case be usefully employed in stopping him.

In the preparation of our pistol ammunition we have, I fear, striven too much after range and penetration (excellent things in their way, but not needed here), while the other side of the question does not appear to have been sufficiently considered. Hence we have a velocity not high enough, as we have seen, to produce velocity effects, and yet far too high for the method I now propose to use, so high, indeed, that its recoil makes even experts gun-shy, destroys all comfort, in the use of the weapon, and seriously affects its off-hand shooting, whatever it may do in the fixed rest. Men *will* flinch, train them how you may, from the kick of the Service pistol, and we all know the effects of their doing so.

Now, these disadvantages would all disappear, and our pistols become at once the effective close-quarter weapons they are designed to be, did we boldly set to work to diminish our charge of powder, to add to our weight of lead, and to flatten the points of our bullets; for by these means we should *decrease* penetration (of which we have too much), *increase* the force of our blow (of which we get too little), and we may rely on the range being sufficient and the shooting good, if only our bullet is well balanced and our charge properly proportioned. Captain Taekels, a Belgian officer, who devoted much attention to these matters,

in his "*Étude sur le Pistolet*," proposed to use in a 12-millimetre revolver (.470) a round bullet, which, he says, will produce all the necessary effects. Here I disagree with him. In the .450 pistol we have adopted, by using an elongated flat-headed bullet, we can get in far more lead than he can, while the flat surface will meet with more resistance, and therefore give a heavier blow than a hemisphere. No doubt a still heavier blow, with the same weight of lead, would follow the employment of Lord Keane's cross-cut bullets, or other similar means by which to combine higher velocities with less penetration.

Whatever we may have to do later on, to increase the effect of the .303 bullet—which, indeed, sadly needs it; for if a man can walk about for three days with six wounds from these projectiles in his body, one can't help asking one's-self what a horse may not do—I should be sorry to recommend cross-cut or hollow-headed projectiles for use in our pistols.

It seems to me that there is a certain difference between loading the rifle which is to be fired by word of command and into the brow of the enemy, with bullets which will aggravate the wounds inflicted, and doing the same thing for the weapon one has to use on a single antagonist and in personal combat. In fact, one would rather do such a thing for the benefit of one's own side than for the advantage of one's own self.

With the flat-headed bullets I have ventured to recommend, the case is different. The wounds made by them will, in the long run, probably prove less severe, though more immediately deterrent, which is what we require.

Unfortunately, we have no better representative resistance than half-inch elm planks soaked in water, by means of which to ascertain how far a pistol bullet will enter the sort of target it is intended to be used against.

One would have supposed that something better than this might have been designed during all the years we have had to think about it.

Nevertheless, isolated experiments have been made from time to time which have thrown a little light on the subject. I have myself seen and handled a pistol of about .450 calibre so loaded as to produce the very effects here spoken of. It shot admirably at twenty-five paces, had no unpleasant recoil, and yet one of its bullets would knock a man down as well as could be done with a blow of the fist. The exact details I have forgotten.

I have, however, lately undertaken certain experiments based on the general ideas put forward in this paper, but, so far, have only arrived at certain general conclusions. This, however, I may say, that I hope soon to be able to satisfy myself fully on the subject; and, should my conclusions warrant my doing so, I shall try to persuade some of the makers of ammunition to prepare enough to enable others to verify or contradict the theories I here put forward.

I have hitherto spoken of the revolvers of large calibre, .455 of an inch or thereabouts. I will now say a few words regarding some

adjuncts which may be useful, and some other forms of pistol which exist either *in esse* or *in posse*, finally adding a few hints on the manner in which they can be used to the best advantage.

In our modern pistol, whether we load it for range or for the delivery of a stopping blow, there will always remain a recoil sufficiently heavy to be unpleasant, and any plan that will absorb or diminish this will tend to our advantage.

Here, then, is an india-rubber recoil pad or sleeve, which not only does away, in a measure, with the jar on the wrist, but changes the form of the stock into something like the old saw-handle of the duelling pistol—quite the best form to give a firm hold and first-class shooting. It has, so far as I can see, only one fault—that of bringing the middle finger too close to the guard, where it is apt to be bruised by the recoil.

Again, the kick is almost entirely absorbed in the case of the new automatic Borchard pistol, now being made by Messrs. Loëve, of Berlin. This is a strange-looking weapon, but is, nevertheless, easier to shoot with, and more convenient to handle, than many another to the form of which our eyes are accustomed. It has a light wooden attachable butt, with which excellent shooting can be made at 500 metres.

It fires eight shots of small calibre (.303) as fast as you can crook your trigger finger. But, if what I have said be correct, it will be depended upon rather against the highly civilised man than against the wild animal or the savage. Still, the eight cartridges will make it attractive to many people, though, for myself, I have not forgotten how, when in the States, I was once hesitating between a five-shot Smith and Wesson (of which I preferred the mechanism) and a six-shot pistol, in which the idea of the extra cartridge was rather alluring. The storekeeper, seeing my difficulty, said: "Well, Colonel, I guess you can do as you please; but here we think if a man can't do his business with five shots he'd better go home." Nevertheless, the Borchard pistol is a model of inventive talent and beautiful workmanship, and deserves every success it may obtain. Other automatic pistols will, I doubt not, be sooner or later brought forward, but they will always have this disadvantage to contend with. In order to beat the revolver (all of whose good qualities they must possess, in the first instance), the inventor will be obliged to enlarge his weapon to get in even six full-powered cartridges; while if he tries to evade the difficulty by diminishing their size, he at once commences to diminish, *pari passu*, the power of the pistol. I do not profess to say the thing is impossible, but I *know* that it is not easy. Some countries which have not our own experience have thought that because they have diminished the bore of their rifles, they can, therefore, do the same thing in their pistols with safety, and thus they are apt to favour repeaters. What I have said in this paper will show the fallacy of any such reasoning.

Having now brought you, though, I fear, by a somewhat circuitous route, to the pistols we have at present, allow me to say a word or two as to their use. If they be as I have said they are, weapons for close quarters, and not to be used beyond twenty paces, such hints as, with all diffidence, I am about to give, can be easily followed.

The eye being fixed on the object it is intended to strike, the pistol should be brought at once to bear on the vertical line which bisects it. There should be no lateral correction of aim necessary for an object or person at rest. Attend now to your elevation only. Whether the weapon should be fired with a rising or falling hand, when fine shooting at a target is in question, must be left to every man's own judgment.

There can be, however, I think, very little doubt but that, against an armed antagonist, the pistol should be coming down when the bullet leaves the barrel; the muscles of the hand are then in a condition of tension more likely to resist a throw-up. There is less chance of shooting over him; you may hit him a little low perhaps, but you will always hit him somewhere.

Some may object that to raise the pistol and then bring it down takes longer than to bring it up only, the hand having further to travel. But circumstances which will make this fraction of a second of vital importance are rare indeed.

But as the mind is at rest when once the enemy is well covered, a pause to make finer shooting is then in order.

If, however, time presses, a snap shot from the hip will tell, nine times out of ten, at close quarters, and, if not, will generally gain time for a more deliberate aim with the next barrel.

For snap-shooting no plan is better than to pull with the middle finger, extending the index along the weapon and parallel with the barrel. You can always point your finger at anything your eye is fixed on; and the ball, therefore, will follow the eye without the necessity for any aim whatever.

Let a man, however, beware that his finger does not project across the space between the chambers and the barrel, as the escaping flame cuts like a knife. It would be useful were a small shield for the finger attached to the pistol at this point.

Every man likely to be called upon to use a pistol should practise assiduously, and with the left hand as well as the right. Anyone can let off a pistol, but no weapon requires more practice to make a first-class shot, and, above all, a quick one. Let no one forget, however, that such practice to be of any use must be carried out, not with saloon pistols or reduced charges but with the fighting weapon, and the cartridges you will use in the day of battle. A pistol, besides, has got as many tricks as a horse, and you have got to learn them.

Lastly, as it seems not unlikely that we shall shortly see some good savage fighting, with tribes and nationalities too, who need a great deal of stopping, I would venture to point out that, should the question of pistol ammunition be as I have stated it, it may be worth the while of the authorities responsible for its issue to look into this matter; but whether they do so or not, there are many others, the safety of whose skins may shortly come to depend on the accuracy of their shooting and the efficiency of their pistols, and to them I commend these remarks.

Captain VINCENT J. APPLIN (late Military Train): I think all present must be very interested in the practical lesson we have learned to-day. I have had some considerable experience in pistol shooting, and I can bear out every word our lecturer has uttered regarding the overloading of pistols; the fact is well demonstrated in what the lecturer has stated, with regard to the unfortunate officer who was killed after firing six bullets into his enemy. I also experienced something similar in an attack on the legation in Japan, when Corporal Crimp was killed. The corporal fired and hit the man through the chest, but he came on and killed the corporal. Mr. Colt gave a lecture in this Institution in 1858. I do not know whether there has been any lecture given since then on this important subject. Mr. Colt was showing the power and accuracy of his revolver. He stated that sixty shots were fired from a rest at a 6-foot target, 50 yards distant; with the result that sixty hits were made: forty-four above the line, and sixteen below; showing conclusively that the pistol was overcharged. I believe the Frontier Pistol is used in some parts of America, a powerful and accurate weapon; and I believe a stock is sometimes used, is it not?

Colonel FOSBERY: I think it is.

Captain APPLIN: It used to be so. A smaller pistol was issued with a smaller charge of powder; this pistol made forty-eight hits at 50 yards with forty-eight shots; above the line twenty-five, below the line twenty-three—a very much better average. I was going to relate to you just now my experience with regard to the unfortunate corporal who was killed. On that very morning I discharged 120 rounds from Colt's revolvers, and there were ninety out of the 120 that missed fire. That will give you an idea of the uselessness of the weapon in a damp, warm climate when allowed to remain loaded a week or two. I had a pistol with me for many years made by a Belgian maker, which carried a small charge of powder with a heavy bullet. With that pistol I have (going at full speed on my charger) killed wild dogs, shooting right and left, there was no recoil; it was a five-chambered revolver, and the most accurate pistol I have ever used; the barrel was 8 inches in length with trigger action. I remember many years ago, when commanding the troops in Japan, escorting Mr. William Frere to the island of Inocemi, while drinking our tea on the verandah one of our party threw a bottle into the lake, and commenced firing, others followed, and made good shooting. I said in fun, "Don't break the bottle; draw the cork!" "Will you do it?" said Mr. Frere. Taking out my pistol I drew the cork with my first shot, and broke the bottle with the next one. It was a fluke, I admit; but it will show you the accuracy of the pistol. I could not have done this with Colt's revolver, or the revolvers of the present day. I believe Webley's pistol is perfect in every way, as regards mechanism; but the fault of the guard coming against the middle finger is bad, and would very soon skin the finger. That is a very great fault. There is also another one, viz., the weight of the pistol, 2½ lbs. The Smith-Wesson is very far superior to the Colt in the case of handling. I quite agree with the lecturer in everything he has said with regard to the overcharging of the pistol. It is utterly impossible to get accuracy, and you do not want the great force; but you want unquestionably a very much larger bullet. I was in a gun-maker's shop to-day, and he told me that they did not send any revolvers to London, but were sending double-barrelled pistols, with slugs. The gun-maker said, "We have now just received a telegram to send out three of these pistols to one officer." He showed me a bullet about the size of a pea, and at 10 yards I should think those bullets might be effective. As to stopping a man at 20 yards, I should think the weapon would be of very little use.

Colonel E. T. H. HUTTON, C.B., A.D.C.: I think that both Services owe a debt of gratitude to Colonel Fosbery for bringing forward this most important subject. It is a question that has caused considerable thought and anxiety to many of us who have been directly engaged in recent campaigns, and it is a subject to which little attention has been given. I most cordially endorse all that

Colonel Fosbery has said with regard to the stopping power necessary for a pistol. A pistol is a hand-to-hand, or short-distance, weapon; it is a weapon which has to be used when it is a question of life and death to the firer, and therefore it must possess absolute accuracy, reliability, and stopping power. I am almost afraid to think over the number of men's lives that have been sacrificed to revolvers jamming from rust and grit, and from other similar causes so common in a campaign. The lecturer, in his important remarks on the necessity for a large calibre and a small charge, did not state if he recommended a revolver or a simple form of weapon, such as a double-barrelled pistol. I should like to remark that if you have a larger calibre and a heavier bullet for your revolver, your weapon becomes so heavy that it would be useless for the purposes of a hand-to-hand combat. I am strongly in favour of a double-barrelled pistol, and prefer the Lancaster pattern, on account of its extreme simplicity and the ease with which it can be kept effective and clean under the difficulties of a campaign or on active service. I look upon the revolver as a weapon of the practice ground, and unadapted to the rough-and-tumble usage of a campaign, and in this respect much like the earlier forms of machine guns. The primary qualities for a reliable weapon adapted to hand-to-hand work are: firstly, extreme simplicity of construction and of manipulation; secondly, immunity from rust and effect of weather; thirdly, lightness and accuracy, with great shooting power at distances not exceeding twenty paces. These conditions are not satisfied by any form of revolver yet invented, and from practical experience I am of opinion that a double-barrelled pistol of the Lancaster type is by far the best hand-to-hand fire-arm for soldiers on service. Two well-aimed and effective shots at short distances, viz., ten to twelve paces, are far more valuable than six unreliable shots fired hastily at longer ranges. The experience of gentlemen who have used and practised with revolvers under peace conditions is not to be relied upon in this matter. However necessary and important it undoubtedly is to clean and continually inspect the revolvers upon a campaign, it is not done, and can rarely be done satisfactorily. Gentlemen who have not been much in service, and exposed to the varying conditions of weather, of dust, of dew, of fording rivers, and of lying in muddy bivouacs, can hardly realise how quickly and unexpectedly revolvers become useless from rough wear in the hands of wearied troops. The lecturer has pointed out the necessity for practice with the pistol. I most cordially endorse his remarks. It has been my privilege during the last few years to command troops in Australia, where some of the finest horsemen and best riflemen in the world are to be found. We have recently instituted mounted competitions with revolvers at the various rifle meetings, in which competitors fire with their revolvers at a target with horses at a gallop at various distances from 15 to 20 yards. I can assure the audience that fine horsemen as these men are, and accustomed to fire-arms on the stations in the back country and elsewhere, their practice has hitherto been execrable. The necessity in both Services of officers and men alike practising with the pistol is of paramount necessity, and it is a question which has been almost entirely neglected. Our thanks are due to Colonel Fosbery for his lecture to-day, and I only hope that his having ventilated this subject in the way he has done to-day will cause public attention to be attracted to it, and that we may have a simpler weapon and one with better stopping power.

Captain A. H. EAST (1st Vol. Batt. Hampshire Regiment): I should like to say a few words about the pistols. The lecture has been of very great interest to me. I cannot claim, as some can, to have been on service at all, but I have been firing pistols and fire-arms of one sort and another ever since I could hold one of any kind in my hands. I have rather had to think of the pistol. I have been running a machine gun, and, as my gunners were armed with the revolver, I had to go into the question of revolvers. I have heard it said of the revolver that you do not often want it, but when you do you want it very

badly indeed. For a pistol to be any good the first thing is its capability of stopping a man; and the first thing to stop a man is to hit him, and a pistol is no good that will not shoot straight. I quite agree that you do not want it over 20 yards, but it must shoot straight for that distance, at any rate. You want to stop a man with one bullet, as the lecturer said. You do not want to fill him up with holes. There are two or three ways of getting that result with the rifle, but with the pistol high velocity alone is of no use; you must have weight of bullet. I think the whole question of stopping has been discussed in the *Field* with regard to shooting game with the rifle, and it was found there that the moment the skin was broken on the other side of the animal a great deal of the power was lost. I think that is probably true of the pistol. If your bullet stops in the man he gets the whole blow delivered on to him; if it passes through him part of the force is lost. Of course, if you have a heavy bullet I think you may reduce the charge of powder a little. At present you do get a tremendously heavy recoil, but you cannot help having a good deal. There I rather find fault with the pattern of the present pistols. The best of them in respect of recoil is the Smith-Wesson. A great fault is to be found in the curious way we have in England of making our pistols all double-action. I do not know whether any gentleman has ever used the trigger action on service, but I can answer for it that in the rapid-firing competition at Bisley the winning scores are made solely by individuals who do not use the trigger. No individuals who have used the trigger action have ever got a prize by doing so; I do not think anyone has ever succeeded in getting the six shots off in the twelve seconds allowed. I can find any amount of men who can in that time put six bullets into the target time after time by cocking with the thumb, but I never heard of anybody doing it with the trigger action. I cannot conceive why we are afflicted with this trigger action. The fact is this—and I believe that if there are any revolver-makers here they will say so too—the effect of having this double action is that you force the barrel higher up above the handle, and the result is that the axis of the barrel, prolonged backwards, comes much higher over the hand. If you have only a single action you can get a barrel down so that the axis of the barrel comes close over the hand. If you fire with the Colt or the Webley with Service ammunition, or still more the Remington '440 with 40 grains of powder, your hand is thrown back and up a long way. I generally use my pistol for rook shooting: it is good practice. I fired 400 rounds out of a Webley on Monday, and my hand was getting very sore, and I had to change from hand to hand; but that would not happen with the Smith-Wesson. I was firing then with a 225-grain bullet and 13 grains of powder; but I could fire all day with the Smith-Wesson, firing 23 grains of powder, the Smith-Wesson I use being a single-action pistol, and the other a double action. You get the same kick, of course, if you get the axis of the barrel close over the hand; but it is directly backwards, not up, which makes all the difference. Then there is the exaggerated foresight on the pistol; you do not want a foresight a mile high solely in order to counteract a totally unnecessary upward kick. Another great point in a pistol is connected with the revolving of the chamber. After the 400 rounds with the Webley, fired straight off the reel without cleaning, when I took the weapon apart there was not an atom of fouling on the axis of the cylinder, which is good. Another thing is the arrangement of the stops. In the Colt or the Webley you never by any chance get hold of the wrong chamber. In the Smith-Wesson I have got it does sometimes happen that when you have fired three rounds there remain loaded cartridges on one side, and the other side of the chamber is empty, and that the revolving arrangement misses, so that the chamber goes round of itself the reverse way, and when you cock the pistol you come back to an empty chamber again. That is a thing you require to be very careful about in pistols. There is one little thing I should like to say: in my miscellaneous military reading—it may interest our chairman, I think, a little—I came across an incident in the American Civil War, somewhere in the West by the Mississippi, where there occurred a case of

cavalry *versus* mounted infantry, a case in which the United States Regular Cavalry charged and were charged by some of the Southern irregulars who were armed only with pistols. They had no swords at all. It was really a case of swords *versus* pistols—and the pistols won. With regard to the Bisley ammunition, I think the lecturer spoke rather disrespectfully of the 13 grains charge; but another part of his lecture seems almost to imply that 13 grains is too much. Is that so?

Colonel FOSBERY: I will not talk about the powder just now. My experiments are not quite concluded. I do say this, that if you want to practise for actual service, you must practise with the cartridge you are going to use.

Captain EAST: I quite agree with that. What happens at Bisley is this: there are two cartridges, '450 and '455. At the 20 yards target almost everybody uses the '450, because there is slightly less recoil. Directly they come to shoot at the 50 yards target almost everybody uses '455, because they do not think the other so accurate at the longer range. It is only a small matter, but that is really what goes on. The shooting at 50 yards is excellent, and the first prize is taken not infrequently by a possible. If our pistol-makers will kindly get rid of the double-action and give us a gun we can cock with our thumbs without losing our hold on the stock, and which will keep straight back, not up, they will get rid of a great part of the trouble about the recoil. If that is done we shall be able to use heavier bullet, or heavier charges of powder, as required.

Major H. PALMER (3rd Vol. Batt. Essex Regiment): I feel that after the remarks of one of the speakers I ought to rise in defence of the use of the revolver. I cannot see myself what greater reason there is for the jamming and misfiring of the revolver than applies to our present Service rifle, a most intricate piece of mechanism that is just as likely to be jammed by rust. The great difficulty of revolver shooting has, in my opinion, been touched by the lecturer in his reference to the heavy charges that are fired. You take a youngster to fire at a target, give him a Service cartridge or '450, and the kick is enough to deter him. Many strong-nerved men I have noticed have been very reluctant to continue the practice, and the lecturer has struck the nail home, I think, to most of us when he says that it is absolutely useless to put a charge into a revolver that will carry the bullet beyond what you require. If by doing so you deter men from practising the use of the weapon, I sincerely hope, with every speaker who has spoken of the revolver, that lower charges may be used in future. With lower charges we can practise with far greater precision. I think that if we only take our young shots near the mark with a low charge we shall render revolver shooting a very easy thing to acquire and a very pleasant pastime.

General W. GORDON, C.I.E.: I rise to say but a very few words. I have had the pleasure of the acquaintance of the lecturer for very many years, commencing even before the time when he proceeded to the Umbeyla Pass, and had an opportunity of distinguishing himself, as is exemplified by the letters which he puts after his name. I have heard Colonel Fosbery lecture on many topics connected with arms, in all of which he displayed a great knowledge of the subject. I think that this afternoon his lecture has equalled those he has given in former times. I am sure that his opinion will have weight with the authorities, and that throughout the whole Army it will be received as proving the necessity for greater stopping power in the pistol bullet. I need say nothing more, except that I have been pleased greatly with the lecture which he has given.

Colonel G. V. FOSBERY, in reply, said: I am glad to see that Captain Applin endorses what I have said about the penetration of bullets, and also that he was able to give us another instance of the same kind as the story I have just told you. I recollect very well that in reading for the purposes of this lecture I found in the British Museum copies of the lectures of Colonel Colt of which he speaks, and I

quite agree with what he has said about it. I think the good shooting of that Belgian pistol was in gréat measure due to its heavy bullet and low charge of powder; also a man must learn to know his pistol. We both agree on that point. As for slugs stopping a man whom a bullet will not stop, I cannot say I have any faith at all in that idea. Slugs do not give a blow; they make a number of small perforations, and we do not want small perforations—we want to bring the man up standing, stop him there and then; and I am very much afraid slugs will not do it, especially slugs from a pistol. It is pleasant to me that Colonel Hutton, who has had so much experience, agrees with me about the necessity of the stopping power of the pistol. I quite agree with him that pistols must be simple. But, surely, a man on a campaign, whose life depends on the weapon he carries, should, whether he likes it or not, be made to devote some portion of his spare time to keeping it in thorough, first-class order. Otherwise, he ought not to be trusted to carry one. The Lancaster pistol, of course, is simpler than a revolver, but I must say I prefer the revolver all the same. If my life was in danger, and I was in a tight place, I would sooner have six shots than two—a very great deal sooner! I cannot agree that revolvers are playthings, because I have seen such deadly work done with them. I think he quite misunderstood me about the revolver being entirely a cavalry weapon. What I meant to convey was, that the revolver should be classed with the lance and sword. Although it carries powder and a bullet, I place it with the two other weapons that are used at the short distances, and for which an individual antagonist has to be singled out. You have to single out your man: it is a personal battle you have to fight with your revolver. I am very much obliged to him for the kind remarks he has made, and, above all, for what he says about the necessity for constant practice. I think that very likely we shall see some improved pistols before very long, and I certainly condemn in the strongest possible manner the use of the double trigger when a man's life is in danger. If you happen to be able, as my old friend said, to put the muzzle of your pistol into your enemy's waistcoat, then it does not matter how you let it off. Major East is quite right in saying that when you do want a revolver you want it very badly indeed, and it must shoot well. If it shoots well at 50 yards that is good enough, but do not use it beyond 20. High velocity, as he says, is no particular use if your bullet goes through a man. You do not want your pistol-shot to go through a man and into the country behind him. He also takes up the question of the double action: and nobody who is interested in his shooting at all, whether he is shooting for his life or for his prize, will ever use it; it is only in the way. As he says very truly, in order to get the double action you are obliged to raise the barrel above the line of your arm; and the nearer that barrel forms a continuation of the line of your arm the better it is for you. The Smith-Wesson pistol is a good example of how this may be done. Major Palmer defends the use of the revolver as against other things, and, personally, I am quite contented with it—at all events, I would sooner have the six barrels than two. What he said about the Service rifle is also true. A man must keep his weapons clean. Whether they be rifles or pistols they must be bright and clean, and ready for instant service, and in their most perfect and effective condition at the particular moment they are needed. I thank General Gordon very much for what he has been kind enough to say. I owe him a very great debt of gratitude. A great deal of what I have learned about fire-arms and the way to handle them I have learned from him, and it is pleasant to me that he should remember the old days in which I received so much kindness and help at his hands.

The CHAIRMAN (Colonel Lonsdale A. Hale): It is usual for the chairman to sum up, but as I know nothing about pistols I cannot do that now. I took the chair to-day at the request of my friend here. The lecture and the reception given to it to-day is a warning to future lecturers. We have a very small but select audience, and the few speakers who have spoken have thrown a great deal of light on the subject. But why have not we a bigger audience?

Because our friend the lecturer did not choose the right title. In these days it is the possibly explosive title that attracts attention. People generally do not take an interest in pistols, but if the lecturer had put for a title, "The utter uselessness of our own Service pistols," or "The non-stopping power and the absurdity of our Service pistol," he would have had the place filled to overflowing, and the authorities' attention would have been called to the matter. I must now put it to you that a vote of thanks should be given to the lecturer, for his very able and interesting lecture.

THE HIGHLAND RISING OF THE '45, FROM A MILITARY POINT OF VIEW.

By Major-General A. B. TULLOCH, C.B., C.M.G.

Friday, May 29th, 1896.

LORD SALTOUN in the Chair.

IT is only of late years that old family papers and municipal records have been appreciated at their true value by writers of British history: verification of what were supposed to be reliable statements of previous authorities was not formerly considered necessary; the indifference to correct information derivable from old official papers, and even royal charters, seems to have extended up to a very recent period, the only value, for instance, attached to ancient municipal records being—as lately mentioned—the large seals, which the custodians of the charters cut off and gave to their friends who were making collections of such curios; priceless documents were too often looked on as so much waste paper or useless sheepskin, and doubtless such would have been the case even now, had it not been for the patriotic enterprise of private individuals, and especially of such associations as the Scottish History Society, which has lately published some most interesting letters and records of what is known as the Jacobite period. “The Lyon in Mourning,” of which two volumes have already been issued, throws much light on the causes which produced the rising known as the '45.

The publication of Murray of Broughton's papers, now in hand by the same society, will also be a most valuable addition to the subject. Unfortunately the actual history of the rising is to the general public almost unknown, except that it was a rebellion of the Highlanders in which Bonnie Prince Charlie, Culloden, and Flora Macdonald are associated with deeds of heroism, suffering, and desperate adventures, which in these prosaic days are considered somewhat mythical. To wade through even the least bulky work on the '45 requires more leisure than most people can afford, but a short account of one of the most startling episodes in British history may be found worth reading, and be also instructive from a military point of view, as the last invasion of England, which took place but 150 years ago, contains some useful object lessons for soldiers at the present time.

As usual on investigation it is found that commanders whose professional capabilities have hitherto been considered indifferent were really good, and officers held up as shining lights will be shown to be quite the

reverse. With certain historians, it has hitherto been the custom to speak of the Prince for whom the rising took place, as if he were a hare-brained selfish bigot, who took advantage of the devotion of his followers, and ended his days in disgrace; but on going over the records of the whole affair, it is seen that for daring resolution, inborn military talent, indomitable strength of character under the most trying circumstances and abnegation of self when the feelings of others were concerned, few better men have ever stood in shoe-leather than Bonnie Prince Charlie. In reading the account of the campaign, it is not surprising to know that his followers, till the day of their death, spoke of him with unbounded devotion. Justice it is not to condemn him because towards the end of his life, broken down in mind and body, he became a wreck; under similar circumstances how many of the greatest heroes whose lives are recorded in history would not have failed at last! It is to be regretted that after the '45 he did not find an opening for his unquestionable ability and energy in becoming an officer in the French Service, as several of his compatriots did. In 1743 he besought his father to allow him to become a soldier of France, and, had the request been granted, the Highlands might have been spared the rising, and there is every probability that like his great ancestor, Sobieski, he would have been one of the most renowned military commanders of his time. When it is remembered that, with only some 5,000 Highlanders and but two officers who really knew their work, viz., Lord George Murray, and Colonel Roy Stewart, he marched into England—far beyond what any Scottish force had ever before accomplished—and for a time seriously threatened the stability of the English throne, the following short account of the '45 may well show that the great-grandson of Sobieski was a born soldier as well as a Prince.

After the collapse of the rising of 1715, when the military skill of the Duke of Argyll, and the want of it on the part of the Jacobite leader, the Earl of Mar, was so conspicuous, there were two attempts made in favour of the Stewarts by foreign Governments, viz., that by the Spaniards in 1719, when a great storm dispersed their ships carrying 6,000 soldiers, of whom only 300 arrived in Scotland to be captured at Glen Shiel; and in 1744, when a French force of 15,000 men, under Marshal Saxe, who was to be accompanied by Charles Edward, was prepared for a descent on the English coast, but a violent gale damaged the French fleet, which also suffered from the attentions of Admiral Sir John Norris, so that the expedition was given up. Prince Charles thereupon decided to start for Scotland alone, trusting to his personal influence to raise the Highlanders, even without foreign assistance. His father would not sanction such a desperate enterprise, and even, unfortunately, declined to accede to his son's request to be allowed to serve in the French Army. Nothing daunted, the Prince therefore decided to wait for a more favourable opportunity, carefully saving all the money he could obtain for the purchase of arms.

In August, 1744, John Murray of Broughton, the Jacobite agent for Scotland, went to Paris and informed the Prince that the joint opinion of the party was that if the French Government would give 6,000 men,

10,000 stand of arms, and 30,000 louis d'or, he might assuredly reckon on the support of all his Scottish friends; but if the Prince could not obtain assistance to the amount specified, they could do nothing on his behalf. It is said that the agent, whilst conveying the message of his partisans, nevertheless encouraged the Prince to undertake his rash *entèrprise*. The defeat of the English at Fontenoy, and the fact that nearly all the British Army was engaged on the Continent, seemed, however, to present such a favourable opportunity, that the Prince came to the conclusion the time for action had now arrived; and as the French—who, after their success at Fontenoy, seemed to consider a diverting expedition to Scotland unnecessary—would not give the assistance mentioned by the Scotch Jacobites, Prince Charles determined to rely on his own exertions, and start on the expedition. On leaving France he wrote to his father, saying: "Let what will happen, the stroke is struck. I have taken a firm resolution to conquer or die, and to stand my ground as long as I shall have a man remaining with me." History records with what extraordinary determination he carried this out. At the end of June he secretly embarked in a small vessel named the "*Doutelle*," a French privateer, fitted out and commanded by a merchant of Nantes, named Walsh, with 1,500 muskets, 1,800 broadswords, 20 small field-pieces, and a considerable quantity of ammunition. His companions were the Marquis of Tullibardine, Sir Thomas Sheridan, Sir John Macdonald, Francis Strickland, and Eneas Macdonald, Mr. Kelly, and Mr. O'Sullivan. Such was the expedition which was to overthrow the British Government, and which started from France without the assistance, and even without the knowledge, of the French Cabinet. History can hardly find a parallel instance of such determination and force of character in anyone, prince or commoner, as in him, who, at the age of twenty-four, started with seven companions to wrest a throne from one of the most powerful monarchies of that era, and, for a time, seemed on the point of success. The "*Doutelle*" was accompanied by a 64-gun ship, the "*Elizabeth*," privately hired from the French Government. Four days after sailing an English man-of-war, the "*Lion*," fought the "*Elizabeth*," but was beaten off; the "*Elizabeth*" was, however, so damaged that she had to return to France, the "*Doutelle*" continuing her voyage alone till she arrived at Eriska at South Uist, when the Prince, on landing, was informed that Sir Alexander Macdonald, who could bring 1,200 claymores into the field, instead of being ready to join him, as he fully expected, had been gained over by the Lord President to the side of the Government. To most men such intelligence would have ended their hopes; but, nothing daunted, although bitterly disappointed, this extraordinary young man embarked and set sail for the mainland, anchoring in Lochnauagh on the 19th of July. He at once sent for Clanranald, who, on arriving, pointed out that without the assistance of regular troops, arms, and money, a rising was utterly hopeless. Unfortunately, the Prince so worked on the feelings of Clanranald and Lochiel, that they agreed to call out their men and do everything possible to induce others to join; the result being that, on the 10th of August, the Prince

was able to raise his standard at Glen Finnan, near the head of Loch Shiel, and proclaim war against the British Government amidst the wild enthusiasm of the gathering clans, who, by the evening, numbered 1,200 men.

The Government in London, having at last received definite information of the landing, directed Sir John Cope, the General commanding in Scotland, to concentrate at Stirling all his available force, viz., 1,400 infantry and a few mountain guns, and push at once to Fort Augustus for the purpose of crushing the insurrection at its birth. Cope, leaving two regiments of dragoons in the low country, commenced his march on the great Highland road on the 19th, but on arriving on the 27th at Dalwhinnie, and hearing that the Highlanders were so strong that it would be impossible for him to move westwards and force a passage over Corryarrack to Fort Augustus—the pass having been secured by the Prince the previous night—instead of falling back by the road he came, so as to be able to dispute the passage of the Forth, and protect Edinburgh, the unfortunate general carried out the letter but not the spirit of his instructions to march to the North, by continuing along the Highland road which leads to Inverness, where some of the Royal clans were assembling. This fatal move at once opened a passage for the Highlanders into the low country, and gave them possession of the road to Edinburgh, along which the Prince pushed with all possible speed *via* Blair Athol and Perth. He now showed that he thoroughly understood his work, for, instead of pursuing Cope as the Highlanders wished, he turned all his energies towards his true objective, Edinburgh. Full of youthful energy and activity, he won the admiration of the mountaineers, showing that in feats of agility and strength he was their equal, marching on foot at the head of the clans in turn with his target slung over his shoulder, sharing the fatigues and discomforts of the rapid advance, the Highlanders soon almost worshipped him. At Perth it was necessary to halt for a few days to organise the force for the capture of Edinburgh. Lord George Murray joined here, and, by reason of his military training and experience, virtually became commander of the forces. The advance of the Highlanders to Perth produced a panic in Edinburgh. Various frantic attempts were made for defence, but with the enemy almost at their gates, and a large proportion of the inhabitants wishing success to the Prince, nothing was really accomplished. The flight of the two regiments of dragoons at the mere sight of the Highlanders, which was witnessed from the walls, caused all idea of opposition to be abandoned. The Volunteers returned their arms to the castle, and on the night of the 16th one of the city gates, which had been carelessly opened, was rushed by Lochiel's men. Next morning the Prince took up his quarters at Holyrood, and at one o'clock King James was proclaimed at the Cross.

General Cope, who had in the meantime brought his troops by sea from the North of Scotland, landed them at Dunbar, and on the 18th marched with 1,400 infantry, 600 cavalry, and 6 guns towards Edinburgh to give battle to the insurgents, who set out on the morning of the 20th

from their camp at Duddingston to meet him. The opposing forces came in sight of each other near Preston, when Cope at once formed up his force facing west, but the Highlanders rapidly took up an advantageous position on high ground on his left flank, which obliged him to swing round his line to face them, his front being then covered by heavy, marshy ground, over which the Highlanders could not charge except at a great disadvantage. During the afternoon the Prince endeavoured to get into a position from which a successful attack might be made, but nothing came of it, and both the little armies bivouacked for the night. Leaving the opposing forces ready for action at daybreak a short account of their *personnel* and previous training for battle will now be advisable.

The English soldier 150 years ago was recruited from a very much lower stratum of the population than now; the ideas and ways of living of the better classes of those days were decidedly coarse, and those of the lower classes almost brutal. To maintain effective discipline in an army so recruited, a code of laws and military punishments of frightful severity were considered necessary; the amount of hanging and flogging recorded in the general orders of former days is absolutely startling; but notwithstanding such horrible severities, the English soldier showed in action that marvellous bulldog fighting power of the Anglo-Saxon race, and, when under a leader like Marlborough, all other armies went down before the unconquerable British infantry. The soldier's dress in the middle of the 18th century, voluminous and quaint in shape, was not the skin-tight absurdity it became a hundred years later; but the cumbrous equipment with cross-belts and ponderous pouches hanging about the hips must have been very detrimental to efficiency in the field. The drill of those days was slow, precise, and after the rigid pattern so dear to the great Continental drill-master whom all armies copied; close shoulder to shoulder formation, in three ranks, although very defective for rapid attack, was nevertheless about as good as could have been devised for acting on the defensive against a line of swordsmen whose final rush was almost as rapid as a charge of cavalry.

The Highlanders, trained to the use of arms from boyhood, were very proficient in the use of the claymore-broadsword, which all except the lowest class of clansmen habitually wore; a small round shield and dirk were also part of their personal equipment, and when on active service a firelock was slung over the shoulder; a haversack containing oatmeal and an ample plaid supplied all that was necessary in the matter of food and shelter. Brought up as they were, a Highlander thought nothing of lying out in the heather in any weather when herding black cattle or marching to an attack on a neighbouring clan. To the Lowlanders they were at times a perfect terror, raiding the country, whenever such became a necessity; to the English they were unknown except as wild mountaineers and fierce swordsmen who despised all occupations but that of arms, and who were governed by chiefs who possessed unlimited powers, and for whom they were by their high code of honour at all times ready to give their lives. Strangely erroneous ideas still exist with reference to the old Highland clans,

principally, if not entirely, owing to certain statements in Lord Macaulay's history. Those libels on the Highlanders were thoroughly disposed of by Mr. Paget, Q.C., in his "New Examen," published in 1861. It would hardly now be necessary to refer to Lord Macaulay, had he not lately been quoted as an authority with reference to the Highlanders by a well-known public speaker, whose political views are apparently in accord with those of the great whig historian. The principal, in fact, only, witness Lord Macaulay brings forward in support of his statements against the faithful mountaineers, who were always ready to give their lives for their king, is Captain Burt, who in 1725, much to his disgust, was quartered in far-distant Inverness instead of the more congenial atmosphere of London. Lord Macaulay, in his desire to villify the Highlanders, dilates in his well-rounded periods on the traveller's great risk of murder or robbery. Captain Burt's statement on that subject, which Macaulay appears to have overlooked, is as follows:—"Personal robberies are seldom heard of among them. For my own part, I have several times with a single servant passed the mountain-way from hence to Edinburgh with four or five hundred guineas in my portmanteau, without any apprehension of robbers by the way, or danger in my lodgings at night, though in my sleep anyone with ease might have thrust a sword from the outside through the wall of the hut and my body together. I wish we could say as much of our own country, civilised as it is said to be, though we cannot be safe in going from London to Highgate."

This is the witness Lord Macaulay produces to prove the imminent peril a traveller in the Highlands was in of being "stripped and mangled by marauders, and his eyes given as a meal to the eagles."

The rest of his statements with reference to the Highlanders and their social condition, are also shown by Mr. Paget to be equally at variance with truth.

Amusing accounts sometimes appear with reference to the clothing worn by Highlanders. In ancient times the principal and possibly the only garment was the feile—it would now be called a plaid; the lower portion was pleated round the loins, and held in position by a belt, the upper part being worn round one or both shoulders; subsequently the feile was made into two garments, viz., the feile a beg or little kilt and the plaid. The cloth of these garments was dyed in different chequered patterns and colours. This peculiar method of adorning or marking the cloth made in different parts of the Highlands is of very ancient derivation. Roman historians mention that it was a common practice amongst the Gauls, who made use of a rectangular cloak or blanket apparently similar to the ancient feile. Pieces of ancient tartan at least 200 years old are still preserved as curiosities. The weaving of the cloth is far superior to any modern production, and the colouring is evidently produced by vegetable dyes, which give a much softer tone than the chemicals now used for the fanciful tailor's tartans whose name is legion.

To those who take an antiquarian interest in dress, it may be useful to know that on the columns of Trajan and Marcus Aurelius, in Rome,

the bare-kneed Roman soldiers are represented as wearing pleated kilts almost identical with those of the old Highlanders, whilst the defeated or captive barbarians all wear trousers. According to historians the uniform of the British infantry of Cæsar's time was still more simple, and consisted of blue paint only.

When on a hostile expedition, a Highland column marched three deep; on halting and fronting the line was thus at once in three ranks, which was the formation of attack; each sept, of which there might be several in a clan, then massed itself together, the chief leading, the *doaine wailse*—his blood relations—next to him, and in rear of these the ordinary men, who might not be so well equipped. The line was thus formed of small, irregular columns, each under its own chief, who at the final rush led them on, claymore and dirk in hand; comparatively little use was made of the musket, which was often thrown aside after a round or two, the great object being to close with the sword as rapidly as possible. From the size of some of the clan regiments, it is evident that they must have been divided into bodies corresponding to the modern company, and that they were able to form open or quarter column and to deploy.

Returning now to the field of Preston, the Prince during the night received information that there was a road round the East end of the marsh which would enable him to form up on hard ground on Cope's left flank. Three hours before sunrise the flank march commenced, and at daybreak was completed. The Highland force now faced West; it was in two lines, 1,400 in the first, and 1,000 in the second, the lines were fifty yards apart, the Prince marching between them. Although attacked from a direction and at an hour he had not expected, yet Cope had time after the alarm was given to change the front of his small force—throwing back his left so as to face the advancing Highlanders. Cope's infantry was in one line with Gardiner's dragoons on the right and Hamilton's on the left; some Highland companies brought from Inverness made up a small second line in rear; the six guns manned by sailors were on the right flank. The battle lasted but a few minutes; five of the guns were fired with effect, but the infantry had only time to discharge one volley before the Highland line struck them, sweeping everything before it. The attack seems to have been slightly oblique, the Highland left and Cope's right coming into contact first; the cavalry on that flank went about at once, riding down in their flight the unfortunate guard of the guns. The cavalry on the left disappeared at full gallop even before the Highlanders reached them. Of the infantry some 400 were killed and 700 taken prisoners; guns, treasure chest, baggage, and everything fell into the hands of the victors, whose humanity to the enemy's wounded was beyond all praise; had the English soldiers been their own clansmen they could not have been kinder to them.

The Prince returned in triumph to Edinburgh, Lords Ogilvie, Pitsligo and Lewis Gordon, with many other gentlemen from the North, now joined with their men, which brought up the strength of the army to about 6,000, who were soon all well armed and equipped. As a rule, the

Lowland population of Scotland, and especially those who could not forget the persecution of the Presbyterian Church by the Stewarts, were not favourable to the Prince's cause; few of his adherents came from South of the Forth, where the feeling of the great mass of the people was adverse. A certain amount of assistance in money and arms, including six field guns and some artillerymen, was sent from France by the Prince's father, and arrived early in October; it may also be mentioned here that when the news of the success at Preston reached the French Court, it was decided to send an invading force of 10,000 men to England, but the retreat from Derby caused this expedition to be countermanded. At the end of October, the Prince was in possession of a very serviceable little army, rather more than half being true Highlanders; the cavalry numbered 500. There was a sufficient number of field guns and an ample transport train of wagons and pack-horses. Fully believing that the French would now assist, and that the English and Welsh Jacobites would join him in his advance, the Prince decided on the desperate venture of a march on London.

King George, who had hastened back from Flanders on receiving news of the fight at Preston, at once made arrangements for assembling a force in the North of England under Marshal Wade. This force arrived at Newcastle on the 29th of October. A considerable portion of the army in Flanders was also ordered to return to England with its commander, the Duke of Cumberland. On the 31st of October Prince Charles commenced his march from Edinburgh, his plan being to enter England in the West at Carlisle, expecting to be joined by his partisans in Lancashire and Wales, where the Jacobite element was believed to be particularly strong. In order to deceive Wade at Newcastle, the Prince made ostentatious arrangements for marching into England by the East coast road, going himself with a considerable portion of his army towards Kelso, where he arrived on the 4th of November, marching as usual on foot at the head of the clans; that portion of the army commanded by Lord George Murray, which was to move by the Western road and with which was the artillery and baggage, went *viâ* Peebles, Moffat, and Langton to Carlisle; a small connecting force marched *viâ* Selkirk, Hawick, and Moss-paul. Charles remained at Kelso till the 6th, when, having thoroughly deceived Wade, he suddenly turned West, down Liddell Water, and on the 8th picked up the connecting column on the Esk, four miles below Langton; the next day he formed a junction with Lord George Murray's column and marched on Carlisle, which was invested on the 10th. On the 15th Carlisle town and castle surrendered with a large amount of arms, stores, and valuable property. On the 11th Wade moved from Newcastle towards Carlisle, but hearing of the surrender of that place and finding it impossible to cross the intervening country on account of the snow, he returned to Newcastle on the 22nd. The march on London was resumed on the 21st *viâ* Preston and Manchester, but at the latter place, which was expected to receive him with open arms, only 300 men joined. Instead of sympathy, it was too evident that not only was the population of the English towns and villages

quite indisposed to recruit his forces, but everywhere the inhabitants showed themselves more or less hostile to the cause. On arrival at Macclesfield the Prince heard that the Duke of Cumberland was at Stafford, dangerously close to his intended line of advance; Lord George Murray was, therefore, directed to march part of the force Westward, as if the Highland army was moving on Wales. The Duke of Cumberland, although well supplied with cavalry, was out-manœuvred as Wade had been, and concentrated his force as the Prince wished, thereby leaving the London road clear. Lord George Murray then rejoined by a rapid night-flank march, and the whole Highland army moved without interruption to Derby, where it arrived on the 4th of December, and on that day received intelligence that the French were preparing to invade England, and had already sent 1,000 soldiers, under Lord John Drummond, to Scotland—they landed at Montrose the 2nd of December. The Highlanders being now only six days' march from London were in high spirits, expecting soon to fight a decisive battle. A council of war was assembled apparently to arrange accordingly, when, to the Prince's horror, instead of deciding to push on at once, the whole of the council, with the exception of the Duke of Perth, stated that the French assistance had come too late; three armies, viz., one at Newcastle, one at Stafford, and one close to London, amounting altogether to 30,000 men, were closing in on them, whilst their own force barely numbered 5,000. Charles tried his utmost to induce his commanders to continue the advance, but their eyes were opened at last to the utter hopelessness of any chance of success; and on the 6th of December, with their Prince almost broken-hearted, his army commenced its retreat, and arrived at Carlisle on the 19th, with the loss of only forty men, although closely pressed by the combined mounted forces of both Cumberland and Wade, amounting to 4,000. Lord George Murray and Colonel Roy Stewart were in charge of the rear-guard, and right well did they do their duty; with bad and obstructed roads and practically without cavalry to assist them, these two officers did their work so perfectly that every gun and baggage-wagon was brought into Carlisle, and when some 4,000 mounted men attacked the rear-guard at Clifton, beyond Shap, Lord George handled his force so skilfully and struck the enemy such a staggering blow that they thought it advisable not to press him again. The field guns and upwards of 300 tents complete were left at Carlisle, and, unfortunately, also a garrison of 400 men; to the Highlanders artillery was really of little value, but to leave 400 men in a place which could only hold out for a short time was a hideous error. A few months afterwards the heads of several of these unfortunate men remained for many a day over the city gates, grim witnesses of the sad mistake. On the 20th the Highlanders crossed the Esk, and arrived in Glasgow on Christmas Day, having during the fifty-six days since they left Edinburgh marched a total of 580 miles, and literally walked round two armies, each double their strength and well supplied with cavalry.

The Highland army left Glasgow on the 3rd January, and marched to Stirling, which surrendered on the 7th; the castle, however, held out, and the Prince, deceived by his engineer officer, a Monsieur Mirabelle,

who really knew nothing of his work, unfortunately commenced siege operations under the expectation of a speedy surrender of General Blakeney and the English garrison.

On arriving at Stirling, the Prince's army was strengthened by the Highland and French reinforcements of 4,000, which had been assembled at Perth, making a total of 8,000. The Duke of Cumberland had in the meantime been recalled from Carlisle to take command against the expected French invasion of England, his successor being General Hawley, who marched into Edinburgh with 8,000 men, of whom 1,300 were cavalry, which he considered sufficient to attack the Highland army, and deemed it advisable to do so before Stirling Castle surrendered. Leaving Edinburgh on the 13th January, he marched into Falkirk on the 16th, where he was joined by 1,000 Argyle Highlanders. General Hawley, having seen much service on the Continent, had a supreme contempt for the Highlanders, and went off next morning to breakfast with Lady Kilmarnock at Callendar, never supposing for an instant that the enemy would presume to commence hostilities; but depressed and broken as the Prince had been by the necessity of retreating from England, the presence of an enemy roused again into action the instinctive military talent of his Sobieski blood which had out-generalled Cope at Corryrack and crushed him at Preston. He ordered a review of the army near Bannockburn, and when all were assembled at 10 a.m. called a council of war and announced his intention of at once attacking Hawley, his scheme being to obtain possession of the high ground above the English camp and then move down in line of battle. Skilfully handling his force, the Prince succeeded in getting his army in two lines on the high ground before the now thoroughly alarmed Hawley could interfere with his movements. That general, however, managed to get his force also in two lines on the same level plateau, with his cavalry massed in front of his left flank. The three cavalry regiments commenced the action, coming on at a steady trot, against the Highlanders, who waited till they were within about 80 yards and then fired such a destructive volley that the dragoons, according to their usual custom, went about—one portion, however, charged home, but against such determined swordsmen they had no chance. A desperate hand-to-hand fight took place, in which the cavalry were destroyed. The Highland right wing now charged the English infantry, already demoralised by the flight of the dragoons, and drove them down the slope. The infantry of the English centre and part of the right wing attacked the Highland left, which met them sword in hand and overpowered them at once. The whole of the English left and centre had thus, after a few minutes' fight, been overthrown and driven in headlong flight down the hill, and, but for three battalions of English infantry which extended beyond the Highland left, their destruction would have been complete. As the victorious Highlanders pushed on, these battalions, well handled by General Huske, brought a flank fire to bear on them, thereby causing the Highlanders' left to halt and oppose them. This, in conjunction with a fierce storm which as night came on burst over the moor, gave the fugitives time to

escape to Linlithgo, ten miles off, abandoning artillery, camp, stores, and everything. Their loss was about 600 killed and the same number taken prisoners.

Although the Prince stayed in Falkirk with about a quarter of his army for the night, it was not till next morning that the Highlanders knew how complete their success had been ; and now, instead of following up the beaten army to complete its destruction, which would have given them possession of Edinburgh and again restored the Prince to his position as a commander of an invincible army worthy of every possible assistance the French could give, the Highland army returned to the siege of Stirling Castle, on the capture of which an absurd value was placed. M. Mirabelle, with an assurance begotten of ignorance of everything connected with engineers' work, declared it would be surrendered in forty-eight hours ; but within half-an-hour after his battery opened, it was utterly destroyed by the guns of the fortress, and all hope of Blakeney's surrender was at an end. This, together with a feeling that the Highland force, which had been considerably reduced by men going off to their homes with the plunder of the enemy's camp, was not strong enough now to fight the English army, which was being largely reinforced, induced the chiefs to point out to the Prince that a retreat to the Highlands was a necessity. He was much opposed to it, but had to give way, and the position in front of Stirling was abandoned on the 1st February. For the sake of easier subsistence, the clans with the Prince proceeded North by the Highland road, and the rest of the force under Lord George Murray marched by Montrose and Aberdeen, Inverness being given as the place where the two columns were to reunite, and when reinforced, active preparations were to be renewed in the spring.

The fear of a French invasion being at an end, the Duke of Cumberland was sent to Scotland to supersede Hawley. In four days he arrived in Edinburgh, and thirty hours afterwards set out to engage the Prince ; but the Highland army had left Stirling the day before, and could not be overtaken. The Duke, who had been reinforced by 4,000 Hessians, who remained at Perth, went into winter quarters at Aberdeen, and whilst waiting there took the opportunity to punish all Jacobite sympathisers by burning the houses and raiding the estates of those who were with the Prince's army ; even the Episcopalian chapels, with all their contents, were destroyed, Episcopacy and Jacobitism in Scotland being considered always in alliance.

On the 16th, the Prince arrived at Moy Hall, about ten miles from Inverness, being in advance of his army. Lord Loudoun, who held Inverness for the Government with 1,700 men, decided to attempt his capture ; a force numbering, it is stated, 900 was sent off at night for this purpose, but the head of the column was itself attacked when *en route*, and defeated in the dark by a dozen skilfully-handled men under a daring individual named Fraser. The affair was known for long afterwards as the "Rout of Moy."

On the 18th February, Prince Charles took possession of Inverness,

Lord Loudoun and the loyal clans which President Forbes had got together retiring into Ross-shire, from whence they were driven as far North as Loch Shin by Lord George Murray, whose column had arrived at Inverness on the 20th, when the whole Highland force was again united. Lord George subsequently cleared the whole of the English posts out of Glen Garry as far as Blair Athol, and Lord John Drummond held the East country as far as the Spey, but the English Government had now really got the whole of its enemies in its grasp. On the North and West were the scattered clans hostile to the Prince, acting under President Forbes; on the South were the Argyles and the Hessians; whilst on the East the Duke of Cumberland was preparing to advance direct on Inverness. Any assistance from France was hopeless, the English men-of-war having established an effectual blockade of the North Highland ports.

On the 8th April, the Duke of Cumberland being of opinion that the country was now sufficiently clear of snow, commenced his march from Aberdeen; on the 12th he crossed the Spey, and arrived at Nairn on the 14th, where he remained on the 15th, preparing for the expected battle next day. His force now was composed as follows:—Fifteen battalions of infantry, each 500 strong; Argyle Highlanders, 600; three regiments of dragoons, each 300; and eighteen field guns.

Although the Prince's forces had been in Inverness for some length of time, and it was evident a decisive battle would have to be fought in the vicinity, no proper arrangements for it appear to have been worked out. Owing to want of money, and the difficulty of subsisting a large body of troops in any one district, some of the clans had been sent to their own glens, to rejoin when required. A considerable number had also been detached to act against Lord Loudoun, and those who still remained with the main body at Inverness, without pay and very indifferently supplied with provisions, were in a somewhat disorganised condition when the advance of the Duke of Cumberland made it imperative that the Highland army should be concentrated as rapidly as possible for what must be the decisive action. The prospect of again measuring swords with the English quickly made the Highlanders forget starvation and all other troubles, and on the 14th of April, the little army, numbering about 7,000, was assembled on Drumossie Moor, an open upland about five miles East of Inverness. In order to give time for the clans and men to join, who were hurrying up in obedience to the Prince's instructions, it was proposed to take post a little to the South of Drumossie Moor on the other side of the Nairn, where the ground would have been very unsuitable for Regular troops; but owing to the difficulty of obtaining provisions, and the wish to cover the base at Inverness, it was decided to place the army immediately across the main road along which the Duke of Cumberland was advancing. Had it been possible to delay the action for a day or two by taking up a position on the other side of the Nairn, at least another 2,000 Highlanders would have been present; but, pressed as they were for subsistence, and to save Inverness, the Prince decided to risk a general action with the 7,000 men he had, fully trusting that the claymore would, as at Preston and

Falkirk, sweep all before it, even when the enemy's force was some 2,000 stronger than his own.

On the morning of the 15th the Highland army was drawn up in line of battle, the clans all in the front line in the following order:—Athol brigade on the right, next the Camerons (Lochiel), the clans of Appin, Fraser, and MacIntosh, with those of MacLaughlan and MacLean; Colonel Roy Stewart's regiment and Farquharson were in the centre; on the left were three regiments of Macdonalds, styled from their chiefs, Clanranald, Keppoch, and Glengarry. The Prince's second line, or reserve, was divided into three bodies with an interval between each. On the right were Elchos, FitzJames', and Lord Strathallan's Horse (250 all told), with Gordon of Abbachie and Lord Ogilvie's regiments of infantry. The centre division consisted of the Irish troops from France, Lord John Drummond's regiment (French Royal Scots), and that of the Earl of Kilmarnock. The left wing consisted of a handful of mounted men with Sir Alexander Bannerman's and Moir of Strongwood's Lowland battalions. The strength of the first line was about 4,700, that of the second 2,300, of which 250 were cavalry; the artillery consisted of twelve small pieces. Lord George Murray commanded the right wing, Lord John Drummond the left, and General Stapleton the second line.

Although close to Inverness, where there was plenty of meal, the Prince's commissariat officer, whose name is mentioned in Lockhart's papers, managed so badly, that but one biscuit or small coarse bannock per man was served out on the 15th. Still, had the force remained where it was and meal been brought up during the night, the army would have had a very fair chance of success next day; unfortunately for the Highlanders it was decided at a council of war to march off these almost starving men and make a night attack on the English at Nairn, twelve miles distant. The Prince's army set out at eight o'clock, and having to march in one column along a road which had often to be departed from when approaching houses so as to prevent any alarm being given, it was almost daylight before the Highlanders got within three miles of Nairn, and the plan of a night attack had to be given up, the army returning to its former position at Culloden, where it arrived at seven o'clock, worn out with fatigue and starving; some threw themselves down to sleep, others straggled off searching for food, going as far as Inverness. At eleven o'clock the alarm of the approaching columns of the enemy was given; everything possible was done to collect the scattered Highlanders, who formed up in the order of the preceding day; but, instead of 7,000 fresh men only 5,000 exhausted but devoted servants of the Prince were now on the ground to give battle to double their number of veteran troops who had had a good night's rest and were well supplied with food. On approaching the Highlanders the Duke's columns deployed for attack into two lines and a reserve, six battalions in the first line, the Royal Scots of the English service being on the right, five battalions of the second line, and four in reserve. Between each battalion of the first line were two guns, one regiment of dragoons was on the left flank, with apparently four guns near them (the other four being on the right of



× Duke of Cumberland.



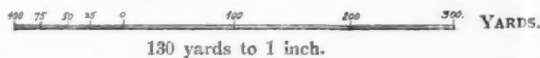
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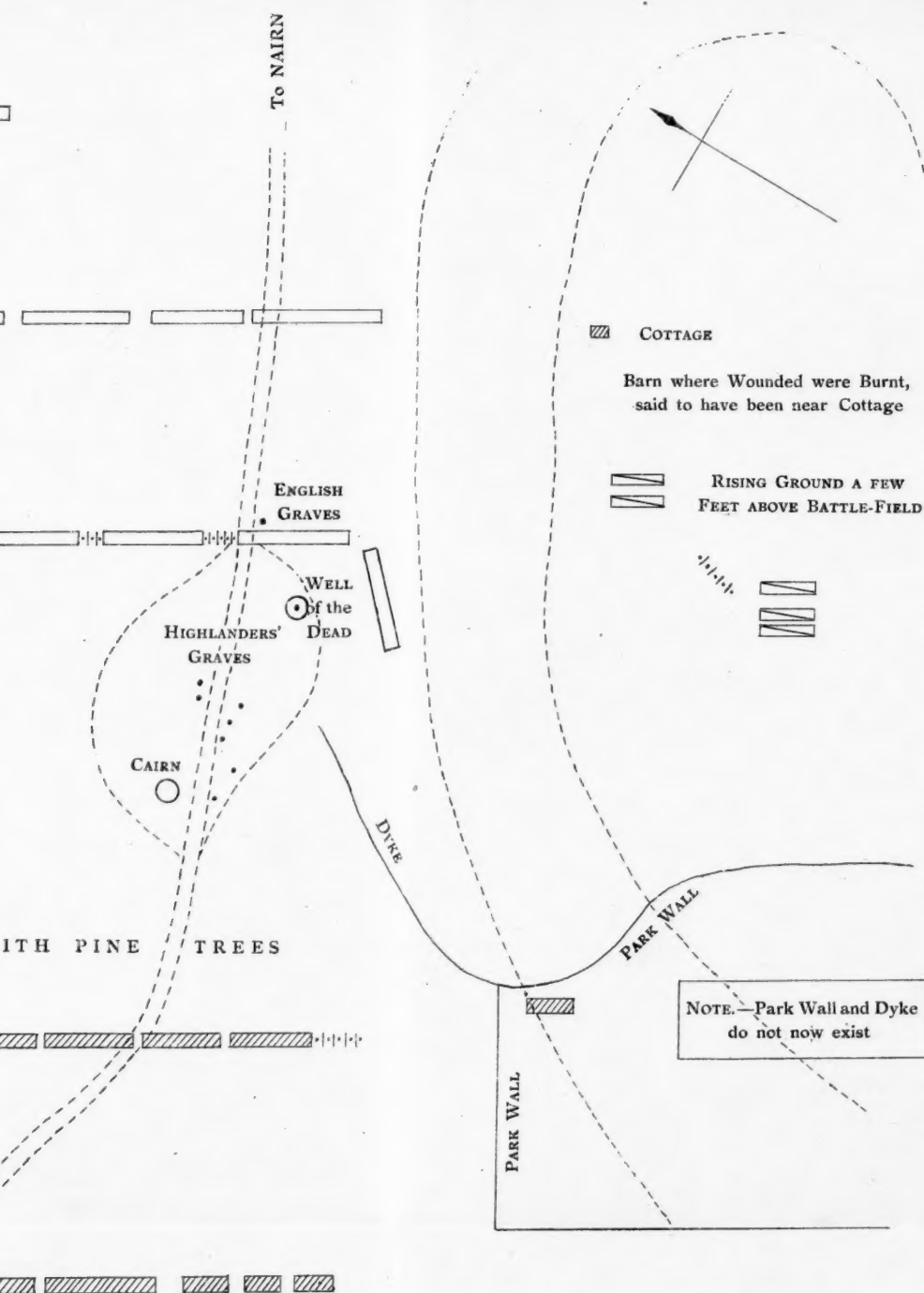
BATTLE OF CULLODEN,

16th APRIL, 1746.

English 9,500 - - 
Highlanders 5,000 - 



From INVERNESS



A.B.T.

the line), the rest of the cavalry was with the reserve, as also were the Argyle Highlanders. When at a distance of 400 yards from the Prince's army, the Duke halted his line, and some slight alterations were made, the right being strengthened by the dragoons, and a battalion from the reserve. Wolf's regiment in the second line was moved forward on the left of the first line, so as to flank the expected attack.

About one o'clock the Highland guns opened a badly-directed fire, which was at once replied to by the enemy with such effect that after half-an-hour of it the Highlanders could no longer remain quiet while their comrades were being destroyed by the well-served English artillery using fixed ammunition; the Prince gave the orders for a general charge, but before these were delivered (the aide-de-camp was killed *en route* by a round shot) the whole right and centre of the Highlanders were already rushing forward, led by Lord George Murray; the three Macdonald regiments on the left, however, did not join the rest of the line in their forward rush. This great clan considered themselves unpardonably insulted by not being given the post of honour on the right, which had always been said to be theirs since Bannockburn, and submitted to be decimated by the English guns rather than overlook such a slight. Two regiments of the left wing of the English first line were almost entirely destroyed by the desperate charge of the Highlanders, who, though sadly diminished in numbers, rushed on at the second, but none reached it; all were shot down, the foremost falling just as they reached the bayonets; the Argyle Highlanders now broke down the walls of the enclosure which covered the right of the Prince's second line, making a passage for the dragoons, who thereby threatened its rear; this movement, assisted by the flanking fire of four guns, which had been brought up to the same position, and the advance of the English line, completed the defeat of the Highlanders, who now retreated in two divisions; one in good order with pipes playing retired across the Nairn to the mountains, the other in complete disorder made for Inverness pursued by the cavalry, who determined to make up for their disgraceful behaviour at Preston and Falkirk by giving no quarter to the fugitives, some of whom were cut down within a mile of the city.

The battle of Culloden commenced about one o'clock, and before two everything was lost and the Prince a fugitive; he eventually escaped to Skye, where the heroic Flora Macdonald succeeded in baffling his pursuers till he returned to the mainland, to be surrounded by, if possible, still greater dangers. At one time he was concealed and protected for three weeks by seven outlaws, whose home was a cave in the mountains. After five months' severe privations and hairbreadth escapes, he, with some of his immediate followers, succeeded in embarking in a French vessel, "l'Heureux," at Lochnewburgh, September 20th, and escaped to France, where he landed on the 29th near Morlaix, in Brittany. His wanderings after the battle of Culloden are uninteresting from a military point of view, but to the end of time the devotion of those who assisted him will never be forgotten. Hundreds of every sex, age, and condition, knew the secret of the Prince's concealment, and the £30,000 reward

offered for his apprehension; but with his Highlanders, who also knew that their lives would probably be forfeited for assisting the fugitive, he was as safe as if he had been living a king in the home of his ancestors at Holyrood.

The Highland loss for the number engaged at Culloden was very great. When the action commenced the first line could not have consisted of more than 3,000; deducting the Macdonalds, who would not move, not more than 2,000 could have taken part in the charge; of these upwards of 1,000 were killed. A hideous anecdote has received a place in history, that the Duke of Cumberland directed a wounded Highland officer to be shot because he looked at him insolently, and that he requested Major Wolf (the hero of Quebec) to kill him. That a prince 25 years of age, well brought up as the Duke had been, who was universally liked by the army, and who had exhibited not only decided personal courage at Dettingen, but also when wounded himself had shown special solicitude for a French wounded officer lying beside him, insisting that he should be attended to first, could give such an order is impossible of belief. On further investigation it turns out that Wolf was not the Duke's staff officer at all, he was General Hawley's aide-de-camp. Now, considering what an unmitigated brute Hawley was, such an order on his part was not at all unlikely; his own soldiers called him chief justice and the hangman. Doubtless, like the dragoons, he considered that his defeat at Falkirk still required victims, notwithstanding the numbers of his own men executed in Edinburgh for a disaster which he himself had brought about. His own old staff officer Wolf writes of him at Canterbury, in 1755 as follows:—"General Hawley is expected in a few days to keep us all in order. If there is an invasion, they could not make use of a more unfit person, for the troops dread his severity, hate the man, and hold his military knowledge in contempt." Unfortunately, he must have had some very powerful interest to keep him as second in command in Scotland. Having seen much service on the Continent, where he commenced his military career during Marlborough's victorious campaigns, and being a lieutenant-general, his opinions would naturally largely influence those of the young Commander-in-Chief, it is therefore reasonable to suppose that the following general order emanated from Hawley:—"Inverness, April 17th.—The four officers next for duty to come from camp in order to divide and search the town for rebels, their effects, stores and baggage. A captain and 50 men to march immediately to the field of battle, and search all cottages in the neighbourhood for rebels. The officers and men will take notice that the published orders of the rebels yesterday were to give no quarter." (This statement about the orders of the Prince's army was, as is now well known, an atrocious fabrication.) The captain and 50 men carried out their orders as intended; the wounded still remaining alive were collected and shot; a considerable number had taken refuge in a shepherd's hut: the door of it was fastened and the building set on fire, the remains of thirty-two charred bodies were afterwards counted. The prisoners taken in Inverness were treated with great severity, being left for two days without food or water, although

several were wounded; they were afterwards put on board ship and sent to London. Many had nothing but their shirts, and some not even that; the unfortunate men were obliged to burrow for warmth in the earth and shingle of the ballast of the hold where they were confined; during the voyage they were treated with indescribable barbarity; in one ship out of 150 only forty men were alive at the end of eight months when they came on shore; the prison ships were anchored off Tilbury Fort for several months.

For their share in the rising, three noblemen, as well as the brother of the late Earl of Derwentwater, were beheaded, and about eighty others executed in England with the barbarities usual for high treason. After being hung up for three minutes and before life was extinct, they were lowered down and disembowelled by the executioner, and their heads were afterwards placed over some public building; the remainder who were found guilty were transported to the plantations.

The Government considered it necessary, as an example, to punish not only the men who had taken part in the rising, but their families also. The Duke's army proceeded to Fort Augustus, where it arrived on May 24th, and remained till July 12th, devastating the country in all directions. Not only were all the mansions of all the chiefs who had opposed the Government burnt, but every gentleman's house, as well as the huts of the unfortunate clansmen; the cattle, and even the goats, were all simply swept away, and the inhabitants left to starvation. To many in the English army the sufferings of the unfortunate women and children were unbearable; but to prevent any humanity being shown, the following general order was issued:—"Fort Augustus, July 8th.—There is no meal to be sold to any persons but soldiers; their wives are not allowed to buy it. If any soldier, soldier's wife, or any person belonging to the army is known to sell or give any meal to any Highlander or any person of the country, they shall first be whipped severely for disobeying this order and then put upon meal and water in the Provost for a fortnight." Prize money was given to all employed in bringing in the cattle; a captain is mentioned in orders as receiving £28 4s. 8d., a private £1 8s. 2½d. for one raid only; there must also have been a good deal of marauding by the men; very severe punishments were found necessary to stop it. "Fort Augustus, June 4th.—William Pitt, John Rayner, John Prendergast, and John Graham, of Colonel Dejean's regiment, being condemned to receive 1,500 lashes each with a cat of nine tails, viz., 500 at the head of each brigade, that is, at the head of Howard's, Borell's, and last at Wolf's for plundering under pretended orders from H.R.H. the Duke of Cumberland; H.R.H. having confirmed ye sentence, it is to be put into execution to-morrow morning accordingly." This prohibition of private plundering did not apply to all ranks, General Hawley, when at Aberdeen, having made a clean sweep of everything of value from the house in which he lived, sending it all, valued at £600, to London.

Brutal as were the punishments in those days, consideration was sometimes shown to a soldier's professional feelings. "Stirling, September, 5th.—The Earl of Albemarle has been pleased to confirm the

sentence of George Robinson who is to be executed on Wednesday next, leaving it to his option to be hanged or shot."

In criticising the proceedings of the different commanders, it is some satisfaction to be able to say that General Cope, who for generations has been held up to ridicule for his defeat at Preston, really did all he could under the circumstances; his newly-raised cavalry were worthless, a large portion of his infantry were merely *depôt* companies, and his field artillery consisted of sailors, with only three Regular and very antiquated gunners; his infantry have been laughed at for being so easily broken; but of late years have we always considered it safe for well-trained British infantry, armed with breech-loaders and assisted by machine guns, to risk an action with naked Arab spearmen, except in square? Stalk round him the Highlanders did, as a tiger would glide round a solitary bull; but, like that animal, the unfortunate Cope was always ready, facing his foe.

A comparison of General Hawley's proceedings with those of Cope is most unfavourable to the former: Hawley's infantry were nearly all veterans from Flanders, who if properly handled, would have stood as well as they did afterwards at Culloden. To Hawley, and to that general alone, the disaster at Falkirk was entirely due; with the contemptuous disregard for his enemy, begotten of ignorance and self-sufficiency, General Hawley can but be held up as an example of professional incapacity; instead of being tried by court-martial, he was subsequently made Commander-in-Chief in Ireland, and then Governor of Portsmouth—such was the power of interest even in those days. The stupendous folly of returning to the siege of Stirling Castle, instead of following up the beaten army and capturing Edinburgh, shows how little the Prince's advisers knew of war, except the mere fighting; it is also difficult to understand how they could have submitted such an extraordinary scheme as that of the night attack on Nairn, and have believed it possible to march in seven hours' darkness, 7,000 men twelve miles, in one column, occasionally across country, and then form up for attack in two different directions before daybreak; failure was a certainty, and the result next day was a victory for the Duke of Cumberland.

Night attacks have now become a recognised portion of instructional tactical exercises; it will, therefore, be interesting to note that in the campaign of the '45 there are three instances of night attacks, one only, viz., that of Preston, being a success; the other, viz., the little affair at Moy, and the other the intended one on the Royal army at Nairn, were disastrous failures. At Preston the force employed was small, and the distance to be travelled short, but even on that occasion the Highland line was not exactly in the position intended when the increasing light caused the attack to be precipitated. At Moy, owing to the attacking force when *en route* being itself attacked by an enemy whose force could not be ascertained in the dark, the head of the column was crushed and the whole force driven back, simply because it could not see what an insignificant enemy was in front of it. The rout of Moy shows what may be done in guarding a position against night attacks, by well-advanced, skilfully-handled patrolling parties. The failure of the Nairn attack was

caused by an attempt to do ten hours' work in seven, at a season when ten hours' darkness was not obtainable. Few military operations are really more hazardous, none require more careful working out in the most minute details than a night attack; a counter-attack in the dark as at Moy, or an unexpected obstacle such as the Bussex Ditch at Sedgemoor, or defective calculation with regard to time required as at Nairn, may result in a crushing defeat for the attacking force.

The position of the Highland army on an open moor over which artillery and cavalry could work, has often been pointed out as an extremely bad one; but both at Preston and Falkirk it has been clearly shown that for real cavalry work, viz., charging, the dragoons were next to useless; and as for the artillery, the Highlanders knew when they attacked the guns that their bite was not equal to their bark. With anything approaching equal numbers the position at Culloden would have been a fairly good one; unfortunately it was not seen that a very much better one existed one-and-a-half miles nearer Inverness, and one-and-a-quarter miles on the South side of the main road just South of the farm of Easter Bogbain; formed up there facing North, the Highlanders' right flank from the nature of the ground would have been secure, Inverness would have been protected and Wade's road from the town to the South for the coming reinforcements would have been covered, the provisioning of the Prince's army would have been easy, and if defeated, their mountain base was immediately behind them. The Duke of Cumberland would have been obliged to form up for attack with his back to the sea, when defeat would have been destruction. After the failure of the night march, the little army ought, unquestionably, to have played for safety by abandoning Inverness and taking up a position on the South side of the Nairn; the cattle on the farms there would have been sufficient for a day or two, by which time the reinforcements from Badenoch would have arrived.

The retreat from Derby has often been severely criticised, but when it was found that there was really no national feeling in England for the Stewarts no wiser move was ever made. Even if 10,000 French had slipped past the English fleet, and landed on the South coast; and still further, supposing that the Highlanders had fought a successful action near London, and that the capital, which was in an almost incredible state of panic on that Black Friday in December, had like Edinburgh been at the disposal of the Prince, that would not have placed Charles Edward on the throne. At least nine-tenths of the people of England and most of the Lowland population of Scotland would have nothing to do with the Stewarts, and as for the dynasty being forced on them by the French or Spaniards, or both in combination, that, as long as the British Navy existed, was impossible. But, on the other hand, should not the last invasion of England be a warning to those who consider an army, except for the protection of naval bases and attacks on other countries, unnecessary? The Highlanders' march South was no mere raid by a handful of mounted men: the little army had an ample amount of field artillery, and a complete baggage train carrying even tents, to lessen the

speed of its advance, and yet in spite of such drawbacks to rapid movement it arrived within six marches of the capital. If a hostile force ever does land on the English coast, the objective point will be the same, viz., London, but the length of the march would not be one quarter of what the Highlanders accomplished in the teeth of two opposing armies, each double their strength. With the Highlanders the capture of London would only have been the commencement of the great work in view, viz., the restoration of the Stewarts; in the present day the seizure of the heart of the Empire would be a catastrophe which is startling even to think of.

The victory of Culloden was the death-knell of the clan system. Fortunately, an English minister saw that he could relieve the dangerous tension in the Highlands caused by the presence of so many thousands of men trained to arms, by offering them active military service, such as they delighted in. The heroic deeds of these men are recorded in our military histories, and during the great French war, at the beginning of this century, the Highlands were found to be the most magnificent recruiting grounds for the British Service. From the Island of Skye alone many thousands of Highlanders entered the English Army. The clans had certainly a full share in making that mighty Empire whose foundations may be said to be based on the lives of British soldiers and sailors.

After the great war such numbers of Highland soldiers were no longer required, and the introduction of sheep began to squeeze out the inhabitants, until at last, after the failure of other attempts at getting a living, there was nothing left for them but emigration. Many sad and heart-breaking scenes were witnessed when the people left the glens they were never to see again. Since those days even the sheep have had to give place over immense districts to make the necessary desolation required for deer forests. Deer-stalking, however, brings the golden-footed southern and money into a country glad to have it; but it must be with sad feelings that these sportsmen, children of the pen, often see in silent glens the remains of dwellings where formerly lived that grand race of men whose swords were ever ready, whose watchword was honour, whose lives were their Chiefs'. Gone are the clans, scattered in every land are their descendants; but as long as our amber rivers roll down to the sea from our grand Highland mountains—aye, as long as the world itself shall last—never will be forgotten the devoted loyalty of our forefathers, or the last charge of the clans on that fatal day on Drumossie Moor, when the claymores of the Children of the Mist cleft a red road to that glorious land, the land of the leal, where live for ever those heroes of old who gave all for their comrades, and died for their King.

Sir WILLIAM A. FRASER, Bart. (late Captain 1st Life Guards), of Ledecune and Morar, said, — My lord, we have all listened with great interest to the lecture just read by the distinguished General. There is one point which pleased me particularly. I have always believed that the man by whom the disgraceful cruelties were perpetrated on the Highlanders, immediately after the Battle of Culloden, was not the Duke of Cumberland. I believe that the atrocities which history has related are to be attributed to General Hawley.

He was next in command to the Duke of Cumberland; his ignominious defeat at Falkirk rankled; and with mean vindictiveness he requited what he suffered in a fair fight in the field upon the unfortunate wounded of the decisive battle. The Duke of Cumberland was an easy-going and unscrupulous soldier; he certainly had no object in making himself uselessly unpopular; and, having achieved a victory, prudence must have suggested that kindness, real or pretended, should be demonstrated by him. My belief is that the term "Butcher Cumberland," which has remained attached to his name, was given to him from his appearance, long before Culloden. I have said this, for it is the wish and the characteristic of every true Highlander to do justice even to his bitterest enemies. On another matter I wish that the gallant General had dwelt at greater length; the recollection of which will never perish in the Highlands. I allude to what is known as the "Rout of Moy." The column which had been detached of two or three thousand men to take possession of the person of Prince Charles Edward were moving on the road which led to Moy in the dead of the night. A Highlander, whose name I did not know till this afternoon was Fraser, as the author of the lecture has mentioned, with the astuteness that is, I hope, still a characteristic of his race, appreciated the situation; he was behind a thick hedge skirting the road along which the column was moving. With the true military instinct he shouted, being quite alone, "Form line to the front! MacDonalds on the right; MacKenzie on the left!" The English Army seized the idea that they had marched into an ambuscade; and without a moment's hesitation they turned tail and fled; never ceasing to double until they were in safe quarters. I believe this circumstance to be unparalleled in history. I have presumed to address you as having the great honour not only to be a Scotsman *pur sang*, but as the feudal lord of the field of Culloden; the Baronies of Leanach and Balvraid are mine; my friend and vassal Forbes, of Culloden House, has, partly at my instigation, erected a noble cairn to the memory of our countrymen who fell on that bloody day. The words which I have written in the book of autographs at Culloden House I would gladly see inscribed on that cairn, they are these, "The Spartans at Thermopylæ died for their homes and their country: the Highlanders at Culloden for a Person and a Principle." It may interest some of those who are here present to know that among other family relics I possess a large set of plate of pewter made for Lord Fraser of Lovat, beheaded in 1747. They bear the ducal coronet, the patent for the said Dukedom having been given to him by James III. It has always excited my surprise, as regards Lovat's conduct, that in 1715 he had appeared on the side of the House of Hanover and had used his influence for them. The late Lord Orford, who had studied this subject, always assured me that he was convinced that Lord Lovat in all his intrigues had at heart, if he had a heart, the success of the House of Stewart; and that the part he played in 1715 was simply to obtain the reversal of the sentence of death passed upon him in consequence of his forcible marriage with Lady Lovat. It seems remarkable that a man of eighty should have taken the trouble that he did, and have staked everything upon the dubious success of the House of Stewart. I can only suppose that with a very active, vigorous mind, such as his, it was the longing for something to do. It is related that, having remained in bed for two years, when he heard of the landing of the Prince in the Western Highlands he said to his attendant, "Now, lassie, you may bring me my brogues." The Dukedom of Fraser—and he disclaimed for his title everything but the family name, a case as regards a dukedom unparalleled—could hardly have tempted him. However, he staked everything; and lost everything, including his head. I have a ring of topaz set in brilliants, given to him by Louis XIV., and worn at the time of his execution. I visited a few days ago with interest, and not for the first time, the house on Tower Hill which the Lords executed in 1746 and 1747 used as their resting-place when brought from the Tower. On the first floor of that building, now occupied by officers, I saw the blood of Lord Balmerino close to the window. I have no doubt

that when his body was carried horizontally from the scaffold it was tilted forward in the window, and a quantity of blood was spilled upon the floor. I also saw on the stairs, although trodden on by numerous generations, distinct traces of the blood. Not long ago I paid the last of numerous visits to Rome. From inclination and from duty I visited the monument in the great Cathedral Church of St. Peter, erected to the memory of the race of Stewart, and I can give no more graphic description than in the words which I quote from Lord Stanhope's "History of Europe":—"Beneath that unrivalled dome lie mouldering the remains of a brave and gallant heart; and a stately monument has arisen to the memory of James III., Charles III., and Henry IX., kings of Great Britain—names which an Englishman can scarcely read without a smile or a sigh. Often at the present day does the British traveller turn aside from the sunny height of the Pincian, or the carnival throng of the Corso, to gaze in mournful silence on that sad mockery of human greatness, that last record of ruined hopes. The tomb before him is of a race justly expelled: the magnificent temple that enshrines it is of a faith wisely reformed; yet who at such a moment would harshly remember the errors of either; and not join in the prayer for the departed exiles *Requiescant in Pace*." So far for sentiment; now for the practical. I hold in my hand the snuff-box taken from Lord Lovat when he was apprehended on Loch Morar. It became the property of Captain Bainbridge, who commanded the detachment that took Lovat prisoner. I might say that the snuff which it contains was snuff actually taken by Lovat; but with the truthfulness characteristic of Highland-men, I tell you that I bought the snuff an hour ago in the Haymarket. I shall be glad to give anyone a pinch, particularly the ladies!

The CHAIRMAN (Lord Saltoun): General Tulloch, ladies, and gentlemen,—I am perfectly certain that I speak for you all when I say that we have listened to this very interesting paper, very carefully prepared, and very excellently delivered, with very great interest. I think it is a most interesting subject. Prince Charlie is, and always was, a most picturesque figure all through his life: a figure about whom there was more romance and more affection for him personally, not only during the time that he was on his unfortunate and ill-rated mission in Scotland, but even when he had left that country and gone to try to recover his reputation as a soldier by offering his sword in various countries, notably in the Austrian Service. We have also heard the most interesting remarks of my friend Sir William Fraser, whom I know as as gallant and fine a Highland gentleman as there is in this country, and who is more versed in Highland lore than a great many in this room or in this country. I think that there is very little of criticism to be made on this paper. The paper speaks for itself. General Tulloch has delivered his address in a most able and interesting manner, and I will simply ask you now to join with me, and I am sure you will all most heartily do so, in giving him a most hearty vote of thanks for the interesting lecture which he has delivered.

Major-General TULLOCH: My lord, ladies, and gentlemen,—I beg to thank you very sincerely for the kind way in which you have received and listened to my lecture. The subject is a particularly interesting one, I think, to all Scotchmen, and especially to those who come from the far North. The amount of interest in everything connected with the old days gone by of that very stirring period still existing in Scotland is astonishing, and I am therefore glad to have a chance of putting together a pamphlet of the '45, which everyone interested may read and judge for himself. Visitors to Inverness naturally go to Culloden, and with a little paper of this kind it at once enables them to grasp the whole subject. I think the saddest sight of all are the numerous Highlanders' graves which are still green.

LIME-JUICE: A FEW CENTENNIAL REMARKS.

By Commander A. A. C. GALLOWAY, R.N., H.M.S. "Daphne."

DURING the last war waged between England, various European Powers, France and the United States of America, which continued, except for the short peace or truce of Amiens, from 1793 to 1815, we undoubtedly lost great numbers of men in action; but it would be interesting to know how many more were lost by disease, desertion, shipwreck, and fire. The writer has been told that during the above period the 42nd Regiment passed 14,000 men through its ranks. From 1778 to 1783, inclusive, 515,000 men were voted by Parliament for the Navy, of these 132,623 were "sent sick." From 1793 to 1798, inclusive, 580,000 were voted, and there were 110,224 sick; during this period lime-juice was provided as a ration (1796), and in the seven years 1799 to 1806, though the number voted rose to 703,076, the sick list fell to 70,832, or from about one in four in the first period, through one in five in the second, to one in ten in the third. The whole total numbers are 1,798,076 voted, and 313,679 sick; the latter number represents the total number of the Navy as at present voted for a period of three years and a quarter and more.

Year.	Numbers Voted.	Sent to Hospital.	Discharged Cured.	Dead.	Ran from Hospital, Haslar, and (?) Plymouth.
1779	70,000	28,592	24,626	1,658	997
1782	100,000	31,617	26,290	2,222	993
1794	85,000	21,373	19,903	990	563
1804	100,000	11,978	9,448	1,606	214
1813	140,000	13,071	10,912	977	13
5 years.	495,000	106,631	91,179	7,453	2,780

Sir Gilbert Blane.

The "Annual Register" for 1763 states that in all the naval battles of the Seven Years' War, the total number of the killed was only 1,512, while the number who died of disease and were missing was 133,708. From 1774 to 1780, inclusive, a period embracing the War of American Independence, the number of men raised was 175,990; killed in action, 1,243; died, 18,545. By referring to James' interesting and instructive

NOTE.—As the range of efficiency in the life of a seaman at that date was considered to be 25 to 30 years, of the 85,000 voted in 1794, there were probably not more than 5,000 of the same individuals serving in 1813.

"Abstracts" it will be seen that the waste of life must have been great in the ships that were lost while keeping the seas in all weathers and on lee shores, blockading in shallow and deep waters, heavy seas, calms and fogs, capsized and foundered while carrying a press of sail in chase, and so on.

ACCIDENTAL LOSSES OF MEN-OF-WAR, 1793-1815.

—	Wrecked.	Foundered	Burnt.	Totals.
Ships of the Line... ..	17	3	8	28
Frigates, Corvettes, Sloops, &c. ...	234	72	7	313
Totals	251	75	15	341

Condensed from James' "Abstracts" Naval History.

This gives a total of 341 *men-of-war* lost by accident during the Revolutionary-Bonaparte wars. Calculating the loss of life at only 50 per ship lost, we get the number of 17,050. During the same period it is interesting to note that we only lost 5 line-of-battle-ships by capture from 1793 to 1801, and none from 1803, after the rupture of the Peace of Amiens to the termination of the war in 1815. The 5 ships-of-the-line lost were the "Alexander," 74, captured by 5 French 74's and 3 frigates, off Sicily; the "Censeur," 74, by a French squadron off Cape St. Vincent; "Berwick," 74, by the French grand fleet in the Mediterranean; the "Hannibal," 74, after grounding during Saumarez' action off Algeciras; and the "Swiftsure," 74, by the French squadron under Gauteaume, in the Mediterranean, consisting of 7 of the line and 2 frigates. During the same period France lost to England 60 sail of the line captured, and had 20 destroyed, sunk, or burnt in action. Holland, 18 and 3; Spain, 15 and 6; Denmark, 20 taken; Russia, 1 taken; and Turkey 1 destroyed; total, 144. No English line-of-battle-ship was destroyed in action, and no English admiral was taken prisoner, though many foreigners were.

In the four days' battle known as the "Glorious First of June, 1794," out of a total of 17,241 present, the number of killed was 580, about equivalent to the crew of a medium 74 of those days, or of a "Diadem," or "Andromeda" of 1896.

At Camperdown, out of 8,221 present ..	203	were killed.
„ St. Vincent, out of about 10,000 present	73	„
„ the Nile, out of 7,401 present ..	218	„
„ Trafalgar, out of about 17,000 present	449	„
„ Copenhagen	253	„

Giving a total of only 1,776 killed outright in the six grand general actions of the long war. The usual proportion of wounded to killed was about 3 to 1 (varying with the distance at which the action was fought and charge of powder used, which caused a difference in the number of

splinters), and of these probably 1 in 3 died; this gives say 3,500 killed and died of wounds. A significant comparison can be made between these numbers and those in the American frigate actions.

English, "Guerrière," taken by "Constitution," U.S.A.

*No. of crew, 263; number of killed, 21.

„ "Macedonian," taken by "United States," U.S.A.

*No. of crew, 289; number of killed, 36.

„ "Java," taken by "Constitution."

*No. of crew, 377; number of killed, 24.

Total killed, 81 } 1 in 11·5.

„ crews 929 }

English "Shannon" takes American "Chesapeake" 330 24

„ "Phœbe" „ „ "Essex" .. 300 4

„ "Endymion" „ „ "President" .. 346 11

Total .. 976 39

1 in 25.

It may be mentioned that the winning side is usually much less heavily punished than the losing, but it will be noticed that the "Shannon" suffered severely even compared with our own beaten frigates; in this action the Americans lost 61 killed and 85 wounded out of 376, and the two ships out of a total of 706, lost 85 killed, or 12 more than at St. Vincent, and this loss took place in fifteen minutes.

To give an idea of the number of men killed and wounded by each shot, when Sir Charles Knowles attacked La Guayra he had 8 ships, mounting 370 guns; the ships received 367 shot, the "Suffolk," 70, getting as her share 146, and the "Scarborough" 20, getting 3; the number of killed was 82, wounded 358; which works out at, say:—

2 men killed and 11 wounded for
every 9 shot received, or $1\frac{1}{2}$ } for this particular action.
casualties per shot

Besides the above general actions there were, of course, several minor ones between fleets and squadrons, single-ship actions, engagements with batteries and troops and cutting-out expeditions innumerable, all causing a steady and continuous drain of life which must have been very large. The fleets and ships must also have suffered from epidemics, yellow fever, dysentery, etc. The blockades were long and severe, and in winter off such places as Brest, Cadiz, the Biscay Ports and Toulon, must have been harassing to the last degree; but nevertheless, we do not hear, as in the earlier wars, of probably the greatest scourge of all—Scurvy.

Scurvy is mentioned—according to Sir Gilbert Blane—by Pliny and Tacitus as breaking out in the Roman armies in Germany, and it seems probable that the human race has been liable to it ever since they assembled into masses and lived otherwise than in the state of Nature, though there are no direct proofs of its occurrence until the Crusades.

*English on'y.

The name is said to be derived from the Danish word "Skjörbug," meaning disease of the mouth. It appears as "Scharbock" (German) in the "Botanologicon" of E. Cordus (1534), about which time or a little later Sir John Hawkins said that in twenty years he had known of 10,000 British seamen who had died of it. Engalenus, a Dutch physician, who flourished in the beginning of the 17th century, tried to prove that scurvy, nearly all skin affections, hypochondria, and various other maladies, are different forms of one disease; many physicians, including Boerhave and Willis, followed him, and consequently worked great havoc; and to this school we owe the misuse of the word Scurvy—meaning most skin diseases—by the poorer classes to this day. Kramer, Physician to the Imperial Armies in Hungary, 1720-30, treated 400 scurvy cases by salivation; but his cure was only moderately successful, as 10·0 per cent. of his patients died. The experiment seems to have been quite sufficient, however, to prevent any further exhibition of mercury, though vinegar, "Elixir of Vitriol," "Wort," and many other nostrums were tried. Scurvy fell heavily on the early explorers in the era of long voyages to India and America, 1480-1540, and was probably more or less common in England in the Middle-Ages in the winter months, as much salt meat was eaten and very few vegetables used at the season of the year in those days. In 1742-45 at one time the "Centurion," 50, Anson's flag-ship, in consequence of scurvy had only 8 men left capable of doing duty, and if she had been obliged to keep the sea a very few days longer could not have come to an anchor—owing to want of men—and must have drifted about like a Spanish man-of-war of the period, which had been unmanned by the scurvy near the same part of the Pacific Ocean. The author of "Anson's Voyages"—scientific and classical as he was—gave it as his opinion that no remedy had been or could be discovered for this pest. In 1780, when Sir Gilbert Blane entered on his duties as Physician to the Fleet in the West Indies, the mortality from scurvy was 1 in 7 of the force employed of 7,000 to 8,000 men, or 1,000 to 1,100 men—sufficient to man two second-class cruisers and three or four destroyers. In this same year of 1780 the admissions to the Royal Naval Hospital, Haslar, were 9,787, classified as follows:—

5539 Continued fever.	327 Rheumatism.	183 Venereal disease.
1457 Scurvy.	240 Flux.	165 Cutaneous disease.
979 Ulcers, abscesses, wounds, etc.	218 Consumption.	102 Contusions.

And less than 100 each of other diseases. The 1,457 scurvy cases must have been very bad ones, as the disease is very amenable to shore life and diet.

Captain E. P. Brenton, R.N., in his "Naval History" writes:—"It was my lot in early life to know it [scurvy] from actual and personal experience. It is produced by a scanty supply of salt provisions, and a want of all the common comforts—I might say necessities—of life: 150 of a ship's company, consisting of 490 men, were afflicted with this complaint, and many died through improper treatment. It was at that time the fashion to bury us up to the hips in the earth in a soft black

mould : my youth saved me, but many fell a sacrifice to it. I remember instances of sudden death among our men owing to the inward decay produced by this disorder. The corpse turned black immediately. A small muscular exertion would produce instant death. I cannot remember how many men we lost by this dire disease ; but I know it was occasioned originally by the bad salt provisions, taken on board at our outfit, and the false economy—nay, shameful parsimony—observed to us all the time we were in the East Indies . . . but kinder and wiser treatment has now driven it out of our Navy. Some of the symptoms of this dreadful disease are a swelling and soreness of the gums ; the teeth get loose, while the legs swell and turn black, and the flesh becomes soft and inanimate like dough ; the compressions of the fingers on it remain and do not fill up for some time : such was my state in 1791 at the Andaman Islands when on board the ‘Crown.’” Thus far Captain Brenton. It is curious that, writing as he does after the year 1830, he should not mention the specific remedy which drove scurvy forth from the Navy, let us hope never to re-appear ; for four years later than the above quoted experience, namely, in 1795, lime-juice was introduced experimentally into the Service. In 1796, just one hundred years ago, its use became general, and so effectual was the simple and pleasant medicine that, when in 1797, Lord Spencer, then First Lord of the Admiralty, on his official inspection, visited the R.N. Hospital, Haslar, and wished to see a case of scurvy, there was not one to show him. The date of its introduction was at a critical period of English history, for it was in the year before the great Mutiny in the Fleet (1797), and when we had already been three years at war with France. It really seems to be a question whether we should have been able to keep up our rigid blockade of the European ports in the latter part of the war without its friendly aid ; at any rate, the maximum number voted—140,000—would probably have had to be raised to 170,000, with a proportionate increase in the number of ships, of which in the last phase of the war we had something like 1,000 of all descriptions in commission.

Lime-juice, as a trial extending to a hundred years shows, has expunged scurvy from the list of the naval medical officer so long as it continues to be administered ; but once let the conditions become favourable to the disease and cease the issue of the remedy, and scurvy soon re-appears ; the most familiar case in point being that of the sledge parties of the Arctic Expedition of 1875, to whom lime-juice was not issued, and, in consequence, scurvy soon made its appearance. Up to the comparatively recent period of profound research into the causes of diseases a mystery hung over the more virulent species, the very names evoking gruesome shadows. “Plague and Pestilence,” “The Pest,” “The Blackdeath,” “The Falling Sickness,” “The Sweating Sickness,” etc., seem to fill the mind with more sombre awe, though really not more fatal than “Bubonic Plague,” “Cholera,” “Typhoid,” “Yellow Fever,” and their congeners. Scurvy was by no means exempt from this ill-defined and vague dread, the doctors frankly could make nothing of it ; it was looked upon as a necessary concomitant of sea-life, and the poor,

patient sailors put up with it as best they could as one among the many evils from which their shore-going compatriots—good, easy men—were exempt, unless living under conditions similar to those prevailing at sea; for among the starved populations of besieged towns, hiding in dark and evil-smelling casemates and cellars, “Scorbuto” often held his malignant sway. Captain Cook kept it at arm’s length during his long voyages by discovering and applying the elementary rules of naval hygiene, but the operations of many another commander were hampered by it. The mental condition and spirits of the men had a good deal to do with scurvy, for in 1782, after the action of the 12th April, and Rodney had defeated De Grasse in the West Indies, the British ships’ companies are described as showing an extraordinary degree of health and energy—the very sick and wounded in hospital binding strips of cloth to their crutches and waving them joyously to show their delight at the victory. Again, in 1744 it is related that when our Mediterranean Fleet, under Admiral Mathews, was in “daily expectation of engaging the combined fleets of France and Spain, there was a general suspension of the progress of sickness, *particularly of the scurvy*, from the influence of that generous flow of spirits with which the prospect of battle inspires British seamen.” From the casual way in which scurvy is thus mentioned, it would almost seem to have been so common as not to call for any particular remarks. It would be interesting to read the comments in the Opposition newspapers, if scurvy should appear to any great extent in a modern British Fleet. But common as scurvy was, such a complete ignorance of the disease was manifested in professional treatises that Hirsh argued therefrom that it must have been rare!

On the other hand, confinement and depression were so favourable to the establishment of the disease, that it appeared among the French prisoners at the dépôt at Norman Cross, though they were on fresh diet, and the French have the reputation of being more buoyant in captivity than the English. Blane, as physician to Rodney’s fleet, gives as an example, that being introduced by Sir Charles Douglas (the First Captain to Sir George Rodney) to the Comte de Grasse, then a prisoner on board the “Formidable,” with the facetious remark, “Permettez-moi, mon Général, de vous présenter notre médecin en chef, qui est presque assez habile pour faire revivre les morts,” the latter’s somewhat sour reply was, “Et peut-être faire mourir les vivants”; and, adds the good-natured doctor to whose charge the conquered Admiral fell, “during the remainder of the day, his conversation partook of the like affability and good humour.” That the question of the care and maintenance of the sick was not only one of humanity, but of great importance to the Navy, and hence to the nation, a few facts will indicate. Dr. John Lind, Physician to the Royal Naval Hospital, Haslar, writes to Sir Gilbert Blane, that, on the 26th October, 1778, the fleet under Admiral Keppel came into port, and before the end of December sent 3,600 sick to Haslar: this number of patients was equivalent to the complements of six 74-gun ships, or of $4\frac{1}{2}$ modern battle-ships of the “Majestic” class. In 1779, the fleet under Sir Charles

Hardy came in, and in the one month of September of that year sent 2,500 men to hospital : a number sufficient to man four 74's, or three of our larger cruisers of the "Powerful" class; even then the fleet retained 1,000 sick of the fever on board, who in these days would be enough to man 20 torpedo-boat destroyers. In August, 1780, after a ten weeks' cruise in the Bay of Biscay, when the beer and all fresh provisions had been exhausted, Admiral Geary's fleet returned to Portsmouth with 2,400 *men ill of scurvy alone*, sufficient to man eight second-class cruisers nowadays. In 1795, lime-juice was issued experimentally, and in 1796 it became general throughout the fleet. Four years after this, according to Doctor Baird—writing in 1815, from H.M.S. "London" to Sir Gilbert Blane—namely, on the 27th May, 1800, 24 sail of the line, frigates, fire-ships, etc., sailed from Torbay, under the Earl of St. Vincent, returning on the 26th September of the same year, and only had to land sixteen hospital cases. During this cruise, there was not one fresh meat day. Augereau, with an army, was then at Brest on board the French fleet waiting to invade Ireland; he had to wait, for only on one day did Lord St. Vincent fail to communicate with his inshore blockade at Camaret Bay in the outer roads of Brest.

This excellent state of health was ascribed to the *personnel* of the commander-in-chief, the establishment or sickbays, the ventilation of the store-rooms, the cleanliness of the men's persons, the dry holystoning of decks remote from ventilation, the burning of fires in the holds to clear out foul air, the introduction of a dress for the seamen suitable to the climate, and the airing of the bedding twice a week. The doctor does not mention the use of lime-juice, but it is safe to say that if it had not been issued all the other precautions would have been unavailing; for though keeping the ships and men clean and sweet is a preventive against all the other diseases traceable to over-crowding, yet four months' salt provisions would most probably have produced scurvy sufficient to cripple the fleet.

The effect of lime-juice in keeping off scurvy has been known at least for nearly 300 years, for on the 2nd April, 1600, Commodore Lancaster sailed from England with three other ships, arriving in Saldanha Bay on the 1st August. To each individual of his crew three table-spoonfuls of lime-juice had been administered every morning, and, in consequence, they kept free from scurvy, whereas the ships' companies of the remaining vessels were so reduced by that disease that the Commodore had to send hands on board to shorten sail and hoist their boats out for them ("Purchas' Pilgrims," Vol. I.). It seems remarkable after such an excellent test that the introduction of lime-juice should have been delayed for nearly 200 years. When at last its introduction was approved, its effect on scurvy was so trenchant that Blane writes of the "sudden extinction of scurvy" directly after the general use of its antidote.

In the present year of 1896, the Queen's Regulations lay down that "On the requisition of the Medical Officer, lime-juice and sugar in quantities not exceeding $\frac{1}{2}$ -oz. of each per individual *per diem* are to be issued to every person on board as the captain may direct. When

troops on board are in charge of an Army Medical Officer, the Captain will be guided by his recommendation in this matter. The lime-juice and sugar, at the Captain's discretion, are to be made into sherbet or mixed with the men's allowance of grog, but they are never to be used separately." The accountant officer is to draw the lime-juice, reckoning an imperial gallon equal to 10 lbs. weight, or one gill to 5 ozs. It is possible to guess at the number of men who have been killed by scurvy, but not those who have been saved by lime-juice. Through the long blockades the above regulations, which ordained the issue, kept the little stream of elixir trickling into the systems of our grand men of the old Navy and saved the lives of thousands, and the health and comfort of many thousands more, enabling us to keep out the fell foe scurvy; enlightened views on hygiene and the sound sense of our administrators and admirals did the rest, and over and over again is the remarkably healthy state of our sea-keeping fleets dwelt upon and emphasised in the letters of our admirals since the magic date 1796 to the end of the war.

Steam has in many respects altered the conditions of maritime warfare, but not those which govern the economy of the human interior. Long blockades are freely spoken of as likely to form important features in the next naval war, and the probable introduction of liquid fuel or some way of coaling at sea in all but the heaviest weather, with methods of cleaning furnaces and tubes, etc., will increase the length of time our ships can keep the seas, and then the dominant factor which will determine the time our fleets can keep off the enemy's ports (not forgetting hostile torpedo-boats) will be the health of the officers and men who compose their crews. Ships are but tools to carry intelligent brains, active bodies, willing hands, and above all well-trained, healthy minds, into contact with the enemy. With our grand modern ships, our insight into the necessary means for preserving the health of our men, and especially by the beneficent regulations ordering the issue upon occasion of the apparently insignificant but really vitally important lime-juice, let us hope that we shall be able to keep the same tremendous grip on all our enemies that of old brought them staggering and exhausted to their knees.

NOTE.—The absence of the writer on a distant station has prevented him from having access to books of reference, and he has had to depend on a few notes made in England; he, therefore, knows how incomplete this paper is on such an important subject, but thinks it may lead others more competent to enlarge on it.

THE USE OF ALUMINUM FOR MILITARY PURPOSES.

By Major C. H. POWELL, 1st Goorkha Rifles.

I PROPOSE, in this paper, to make a few remarks on the subject of aluminum—a metal which is making rapid strides at the present time; although it is only within the last three or four years that this has been the case.

Aluminum is one of the most widely distributed of metals, but the cost of extracting it from mother-earth has hitherto been prohibitive.

In 1827, a man of the name of Wöhler succeeded in producing aluminum in the form of a grey powder by the aid of potassium. He was followed in 1854 by St. Claire Deville, who was the first man to really extract the metal in a state of purity. This result was obtained by reducing aluminum chloride by electricity.

In 1882, Mr. Webster succeeded in very considerably reducing the cost of production; and a few years later, he and Mr. Castner, from the United States, started the Aluminum Company. They erected works at Oldbury, and spent a considerable sum on plant. But they completely failed to produce the metal at a price which would bring it into commercial use.

In 1888, Heroult invented a process which is being carried out by the *Aluminum Industrie Actien Gesellschaft*, at Neuhausen, Switzerland. Here and at Niagara are the only places where the metal is extracted at the present time. Our English workers obtain the metal from these two places in the form of ingots, bars, sheets, rods, wire, tubing, etc.

A company has been formed in England, titled the *British Aluminum Company*, which is erecting works at Foyers in Scotland, with a view to utilising the water-power of those falls.

The two minerals most used for producing aluminum are *beauxite* and *cryolite*. Electricity is used in the reduction of aluminum by Herault's process, the details of which I shall omit, as being too technical and beyond the scope of this paper.

One of the chief advantages of aluminum for military purposes is its remarkable lightness. For comparison, I give below the specific gravities of the following metals:—

Aluminum ..	..	..	..	..	..	2·587
Brass ..	..	..	..	..	..	8·386
Iron ..	..	..	..	..	..	7·775
Copper ..	..	..	..	..	..	8·880
Steel ..	..	..	..	..	..	7·848

It will thus be seen that aluminum, in round numbers, is three times lighter than iron and four times lighter than brass or copper.

Pure aluminum is harder than tin, but softer than zinc, and can be cut with a knife. It is as malleable as copper, and takes a polish like silver.

Unfortunately, it has not been found possible to solder the metal successfully, although numerous attempts have been made in this direction. This is one of the great drawbacks to the development of the metal.

With this introduction, I now come to the object of my paper, which is to advocate the use of aluminum for military purposes.

For over three years I have studied the metal from a practical point of view. While serving in the Gilgit District I used cooking-pots made of aluminum for over a year. My plates, cups, and saucers were also of this metal. In Waziristan and Chitral we used only aluminum cooking-pots in the mess of my regiment. They were satisfactory in every respect, being perfectly sanitary, and were much admired by every officer who saw them on account of their remarkable lightness. To cleanse them they are merely washed out with hot water and wiped dry—no scouring is necessary. After using the vessels for a short time a brownish film coats the inside. To the uninitiated this would appear objectionable; but as a matter of fact this film has absolutely no injurious properties—in fact, acts as a preservative to the metal. It is unwise, therefore, and quite unnecessary to try and scour off this coating. Aluminum vessels should, however, not be washed with soda, as chemical action is set up, which causes the metal to be corroded, and also turns it black. This warning applies to England rather than to India, where soda is never used.

I have inspected pure brandy, whiskey, gin, and vinegar, which were separately put in aluminum bottles for a period of twenty-one days. Brandy was discoloured to a greater extent than the other spirits. Gin was hardly affected, and vinegar apparently not at all. The discoloured liquor, due to chemical action being set up, can be drunk with impunity, although one would naturally turn from doing so. This fact makes it desirable to abstain from putting pure spirits into aluminum vessels. But so far as this defect may appear by some as a reason against the introduction of the metal for military purposes, I think the argument may be refuted by saying that the water-bottle is used almost exclusively for water and weak tea by the soldiers. The German soldier puts coffee into his.

DISADVANTAGES OF ALUMINUM.

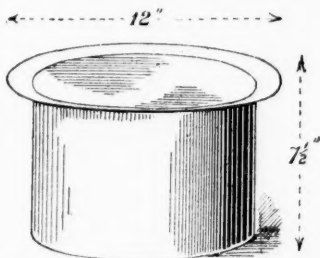
The only apparent disadvantage to cooking-pots made of this metal is, that a damaged vessel cannot be repaired, as aluminum cannot be successfully soldered as yet; so that a badly damaged vessel could only be sold as old metal. In England no difficulty would be experienced, but in India there would be no sale for the metal. Aluminum firms in England will take back old metal at the rate of 1s. a pound, which is

equal to $\frac{1}{3}$ the market value of the metal. I do not anticipate, however, that ordinary care being taken, renewals of cooking-pots would assume very large proportions. In any case, so far as British troops in India are concerned, the cost would never amount to the enormous sum annually expended in tinning the Flanders kettles (twice a month it takes place) for the 75,000 troops which garrison that country. I think, therefore, we may dismiss the one disadvantage to the metal as not a very grave one.

COOKING-POTS FOR BRITISH AND NATIVE TROOPS.

The British Service in India is supplied with Flanders kettles, which are oval in shape. It is not possible, except at a prohibitive price, to make this shape in aluminum. Round vessels are most easily made, they are "spun" out of a blank sheet, and are constructed with neither join nor solder. The pots "nest." The gridiron, and ladle supplied to each Flanders kettle can also be made in this metal, but not the chopper.

I have samples of sound cooking-pots from London and German firms. The standard pattern I required the firms to estimate for was a "nest" of twelve pots, the largest being $12'' \times 7\frac{1}{2}''$. This is the pattern of field service cooking-pots used in many native infantry regiments in India. They can be obtained wholesale at from £3 to £3 15s. a "nest."



The pots can be fitted with sockets and removable handles if desired, but these are superfluous in India, as native cooks will not use them. The cooking utensils are invariably made of the purest aluminum sheet. The thickness of metal used for the four largest is 14 wire gauge; for smaller vessels 16 wire gauge.

THE SOLDIER'S WATER-BOTTLE.

Germany is the only country in the world where water-bottles are made. The cost of machinery necessary to stamp them out is so expensive that it will not be worth the while of any English manufacturer to purchase it till our Government decides to introduce bottles into our own Army.

I have obtained samples from different firms in Germany. The best of all is one weighing:—

7½ ozs. empty.

4 lbs. 7 ozs. filled with water.

Holds 3 pints.

This can be obtained for the sum of 2s. 4d. for quantities of 50,000. This bottle has a flat base, a wide mouth, and is supplied with a cork having an aluminum cap; and, if required, a felt cover and strap can be fitted at additional cost.

Another bottle, which I have by me, is a fac-simile of the enamelled iron one supplied to British troops in India. It is an excellent shape, but only holds two pints, which I do not think is sufficient for India. It costs 3s. 1½d. covered with felt and strap attached. There is, however, a very serious objection to this bottle. They have not been able to make it out of one piece of metal like the others: the top piece is lapped on to the lower portion and joined by machinery, but is neither soldered nor welded. A blow here would very likely splay the join, and so render it likely to leak. I tested one bottle of this kind, and it leaked badly. Till a successful solder has been invented, the only bottle suitable for issue to troops is one which is "spun" out of a single sheet of aluminum.

ADVANTAGES WHICH ALUMINUM POSSESSES.

I will briefly enumerate the several advantages which this metal possesses and makes it so superior to other metals for cooking utensils:—

1. Great lightness; $\frac{1}{8}$ the weight of steel, iron, tin, or zinc. Many will wrongly suppose that because cooking-pots made of aluminum are light they will not wear well.
2. Non-liability to rust, non-corrosive for all practical purposes.
3. Not attacked by food acids, as is the case with copper and tinned-lined vessels, which waste fairly rapidly, and are liable to verdigris. On the other hand, an impervious coating is formed on the inside, acting as a preservative to the metal.
4. Owing to the metal possessing great heat conductivity, food is cooked quicker.
5. With ordinary care, aluminum vessels will stand very considerable wear and tear, as I know from practical experience. They are easily cleaned, requiring only to be scalded out. Very occasionally they may be scoured with *fine* sand.

I have read some interesting data from the report of a German military commission, which testify to the excellence of aluminum for culinary purposes. Sir Frederick Abel and Professor Dupré, undoubted authorities on this subject, are of opinion that there is nothing injurious in the metal so long as pure aluminum is used in the manufacture of water-bottles and cooking utensils.

I am given to understand that the Union Steamship Company has fitted up the whole of its fleet with aluminum cooking utensils, and speaks highly of them. I think it is only a matter of time, and we shall find this metal taking the place of copper in our kitchens.

ADVANTAGES FOR MILITARY PURPOSES.

I have already stated that aluminum is three times lighter than iron, and practically three-and-a-half times lighter than brass and copper—the metals from which the cooking-pots in the British and Native Armies in India are made. It stands to reason, therefore, that the saving in transport for the carriage of aluminum cooking-pots would be very considerable. Take, for instance, a British corps of 1,000 men. 125 Flanders kettles are required, which would take ten-and-a-half mules for their transport. Whereas aluminum pots would require three-and-a-half mules—bulk, of course, always taken into consideration.

Following the same argument, a greater saving would be effected in the case of the heavier metals, viz., brass and copper used by the native corps.

With a large army on field service this reduction of carriage could not fail to be very considerable, and would prove a very great saving in a country where the feed of men and animals is a difficulty and an expense. But this reduction would not only take place on field service, but during annual reliefs in India, and the marching of troops to and fro camps of exercise. The saving to Government would, therefore, be constant, and not merely occasional; and would in a short time recoup the initial cost of outlay.

If the German Government has so fully realised the many advantages of this metal, in view of reduction of transport, and of lightening the already heavily-laden soldier, I cannot but feel that we ought not to be behindhand in grasping the importance, and adopting this forward step in military equipment; and more especially in India, where our difficulties, both in peace and in time of war, are so much greater than are those of the German Army.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Captains—W. des V. Hamilton to "Ramillies," and as Chief of the Staff to Admiral Sir J. Hopkins; Sir R. Poore, Bart., to "Hawke"; A. C. Corry to "Pique"; A. A. C. Parr to "Prince George"; G. A. Primrose to "Indefatigable"; A. K. Bickford, C.M.G., to "Inflexible"; J. H. Bainbridge to "Resolution"; F. C. B. Bridgeman-Simpson to "Blenheim"; W. M. Lang to "Cambridge"; W. H. Henderson to "Devastation." Commanders—H. A. Warren to "Polyphemus"; G. H. Mundy to "Ardent"; E. J. Bain to "Imogene"; S. T. Dean-Pitt to "Hibernia"; W. Mc. Maturin to "President"; the Hon. W. G. Stopford to "Halcyon"; R. H. Travers to "Skate."

Admiral Sir J. O. Hopkins has arrived at Malta in the "Revenge," and assumed the command of the Mediterranean station. The first-class battle-ship "Howe" has returned to England, her place having been taken by the "Revenge"; after paying off at Chatham, the "Howe" is to take the place of the first-class armoured-cruiser "Warspite" as flag-ship at Queenstown, thus adding another powerful battle-ship to the squadron in commission in the Home Ports.

The first-class battle-ship "Prince George" has been commissioned at Portsmouth, and is to be attached temporarily to the Channel Squadron. It is interesting to note how much during the last six months the North American Squadron has been strengthened; a few months ago the "Tourmaline," an old wooden cruiser of 2,120 tons, built twenty years ago, carrying a more or less ancient armament, and nominally capable of a speed of 12 knots, was relieved by the new second-class cruiser "Intrepid," a 20-knot vessel of 3,600 tons displacement, with a powerful Q.F. armament; later, the third-class cruiser "Magicienne" was relieved by the "Talbot." Whereas the "Magicienne" has a displacement of only 2,950 tons and a nominal speed of 18 knots, the "Talbot" has a displacement of 5,600 tons, is efficiently protected and has a speed of 19.5 knots, together with an armament of quick-firers. Now the third-class cruiser "Mohawk," of 1,770 tons, with a speed of 17.5 knots, is to be relieved by the new second-class cruiser "Indefatigable," sister-ship to the "Intrepid," and, therefore, in every way superior to the "Mohawk." These changes in the composition of the squadron have resulted in a gross increased displacement of 4,066 tons, and an average improvement in speed of 4 knots. Hence the North American and West Indian Squadron is far more efficient than it was a few months ago, and is well able to hold its own against any probable enemy in those waters.

The first-class battle-ship "Royal Oak" has been paid off and passed into the A Division of the Reserve at Portsmouth. The "Nelson" is taking out a new crew for the "Ramillies," the flag-ship in the Mediterranean, which is to be recommissioned at Malta. The first-class cruiser "Endymion" has arrived in England from Malta with the paid-off crews of the "Anson" and "Vulcan," and she has left again for Malta with new crews for the "Polyphemus" and "Imogene," which are to recommission at that port. The "Beagle," sloop, Commander D. A. Gamble, which has been commissioned to relieve the third-class cruiser "Barracouta" on the South-East coast of America, has had her commissioned trials at Portsmouth, and has since left for her station. She

was required to develop 1,400-H.P., giving her a speed of $12\frac{1}{2}$ knots, but she realised 1,508-H.P. and a speed of 12·86 knots. She steamed well, but showed herself wet in a heavy sea-way.

The new first-class cruiser "Powerful" has satisfactorily completed her trials. The vessel first steamed for four hours at 25,000-H.P., and then went on without stoppage for another four hours at 22,000, the whole trial being with natural draught. The engines worked steadily and without stress, and the water-tube boilers proved satisfactory. The "Powerful" left Plymouth at 7 o'clock on the morning of the 27th ult., and the requisite H.P. was obtained by 8.37 a.m., when the trial commenced, and for the first four hours the mean power was 25,886, the maximum being 26,497. For a third of the period of the run the power did not drop below 26,000. The revolutions for the higher power were 116, and the speed over the measured distance was 21·8 knots, but as there was a wind force of six against the vessel for three out of the four hours it was estimated that in calm weather she would make $22\frac{1}{2}$ knots. The vessel then proceeded to run for four hours at 22,000-H.P., and this was accomplished without any difficulty. In the last hour of the run the engines indicated practically 24,000-H.P., while the mean of eight half-hourly records was 22,634-I.H.P. The official report of the full-power trial was as follows:—Draught of water, forward 26 feet 3 inches, aft 28 feet 1 inch; steam in boilers, 257 lbs.; vacuum, starboard 26·2 inches, port 25·7 inches; revolutions per minute, starboard 115, port 113·8; I.H.P. 12,655 starboard, 13,231 port; mean collective H.P., 25,886; speed, 21·8 knots. The report on the 22,000-H.P. trial showed that the draught was the same; steam in boilers, 237·5 lbs.; vacuum, starboard 26·2 inches, port 26 inches; revolutions per minute, starboard 109·6, port 109·5; total I.H.P.—10,955 starboard, 11,679 port; mean collective H.P., 22,634; speed and coal consumption not recorded. On the following morning the "Powerful" got under way again for her steering, starting, and stopping trials. Less than thirty seconds elapsed between her going full speed ahead and stopping, while in going from full speed astern to full speed ahead the starboard engine answered in eleven seconds and the port in fifteen seconds. It had been intended to follow up these trials immediately with a series of progressive trials, but, as the tides are for the present unsuitable, they have been postponed.

The new second-class cruiser "Juno" has also completed her trials satisfactorily off Plymouth. The results of the eight hours' natural-draught trial and the thirty hours' coal consumption trials were as follows:—At the eight hours' trial run on the 26th ult., the highest I.H.P. obtained was 8,686, and the mean for the eight hours 8,272, or 272 above that contracted for. The mean steam pressure during the run was:—In the boilers, 153 lbs. per square inch; in the engine-room, 151·3 lbs.; mean air pressure in stokeholds, 42 inch; vacuum, port 27·1 inches, starboard 24·8; revolutions, port 138·3, starboard 138·6, giving a mean speed of 18·8 knots per hour. The thirty hours' coal consumption trial was run on the 1st inst., and the mean results were:—Steam in boilers, 142 lbs. per square inch; vacuum, port 27·1, starboard 26·1; revolutions, port 117·9, starboard 119; I.H.P. 4,863; giving a mean speed of 16·3 knots per hour. The amount of coal used was 1·64 lbs. per I.H.P. per hour. The four hours' trial under forced draught was equally satisfactory. The ship left the Sound about six o'clock in the morning. After working up until about a quarter to eight she started on her run, during which she attained a maximum I.H.P. of over 10,000, or considerably more than 400 above her contract power. The mean indicated for the four hours was 9,771, and mean speed by measured distance 20·75 knots, this being considerably in advance of that obtained by her sister-ship, the "Talbot," which was built at Devonport, and is now stationed in the West Indies. The machinery worked with perfect ease and smoothness throughout, with an entire absence of the vibration generally so noticeable at this high speed in ships of this class. The mean revo-

lutions were, starboard 149'3, port 149'3; vacuum, 26'0, 26'6; boiler pressure, 154 lbs.; pressure in engine-room, 151 lbs.; air pressure, '92 inch; the draught forward 19 feet 11 inches, aft 2 feet 7 inches, being full-load draught.

The new third-class cruiser "Pelorus" has concluded her natural and forced-draught trials successfully. The engines registered a mean of 7,028-H.P., with a speed of 20½ knots, on her forced-draught trial, her machinery being designed to indicate 7,000-H.P., with a speed of 20 knots. Her water-tube boilers worked satisfactorily. The "Pelorus" is one of the newly-designed third-class cruisers, and carries a main armament of eight 4-inch Q.F. guns mounted on the poop, forecastle, and amidships, and an auxiliary equipment of eight 3-pounder Hotchkiss Q.F. and two Maxim guns. It having been shown during the trials that her masts were too high, they are to be shortened by 12 feet.

The new torpedo-boat destroyer "Virago," built by Messrs. Laird Brothers, Birkenhead, has completed a successful series of steam trials on the Clyde. Her six runs over the measured mile were made without difficulty, and the boilers and engines, which worked splendidly, developed over 6,000-I.H.P., with a mean speed of 30'57 knots. During the three hours' coal consumption trial, at not less than 6,000-I.H.P., at one time her engines were running at 6,600-I.H.P., and the vessel was steaming at 31 knots. As, however, such high records were unnecessary, she was eased down, and the mean results for the three hours were:—I.H.P., 6,425; speed, 30'05 knots; coal consumed, 2'43 lbs. per I.H.P. per hour.

At Portsmouth lately some interesting experiments were made during the runs of the "Daring," instructional torpedo-boat destroyer, by Commander R. G. O. Tupper with a kite 6 feet long and 3 feet wide at the broadest point, invented by Captain Baden-Powell, Scots Guards. The kite was unprovided with the tail that forms a feature of the schoolboy's toy, but instead it carried two lines, the ends of which were retained on board. It was found that, with the wind between these two lines, the kite was so dirigible that it was easy to drop letters or even a hawser into another boat, and so establish communication. The trial was regarded as highly successful.

A few months ago the Admiralty issued an order directing that all ships from first-class battle-ships down to second-class cruisers were to be fitted with mast-head semaphores. This order has now been suspended in consequence, it is stated, of the difficulty experienced in several ships of keeping the gear intact in stormy weather. It has been suggested as a means of overcoming the difficulty that the vessels supplied with the masthead semaphores should be fitted with stouter topmasts and topmast rigging; but, in view of the increased resistance larger spars would offer to the wind, together with the clumsy appearance aloft, the Admiralty are unwilling to adopt the suggestion; so it would appear the signalling problem is still unsolved.

In the present day the speed at which war-ships travel causes them to make their own wind in many cases, so that when flags are used they are blown directly fore and aft, and it is almost impossible for another ship ahead or astern to read a signal. These difficulties have been so far recognised that during the last few years experiments have been made with four different systems of signalling. A diamond-shaped cone, invented by Prince Louis of Battenberg and Captain Percy Scott, R.N., was first tried. This proved difficult to work, so it was discarded. About the same time Admiral Fane's drum was tried, but the signals it made were not sufficiently legible. An Austrian system, otherwise meritorious, failed on account of the delicacy of the mechanism connected with it, and then Admiral Wilson's masthead semaphore was fitted to ships; and it is this semaphore, which in its turn seems to have failed, owing to the too severe strain imposed upon the

mast, and a very moderate gale seems sufficient to bring down the semaphore and the topmast with it together.

The Admiralty have called upon the Dockyard officials at Devonport to make a survey of the battle-ship "Téméraire," with a view to the improvement of her armament. Her masts are to be removed and military masts substituted for them, but it will be interesting to see what other changes are proposed. The ship was built as long ago as 1877; her speed is now given as 13·8 knots, which is about the same as that of the "Dreadnought," and nearly that of the "Devastation," the "Thunderer," and the "Sultan," and her armament is obsolete to the last degree. Each of her four 25-ton muzzle-loading guns has a muzzle energy of 7,190 foot-tons, as compared to a muzzle energy of 14,430 foot-tons possessed by the 29-ton breech-loaders with which the "Devastation" and "Thunderer" have been re-armed, the perforation of wrought iron by the two weapons at 2,000 yards being respectively 11 inches and 18·6 inches. The 18-ton guns, of which the "Téméraire" carries four, are of course a still less powerful armament, and her Q.F.'s are at present represented by four 6-pounders and ten 3-pounders. Like the "Dreadnought," however, she is one of the few battle-ships in the British Navy having a complete water-line belt, and her broadside and barbette armour is sufficiently thick to make her a valuable vessel in the second line. It may be hoped, therefore, that the process of re-arming will be carried out in thorough fashion if the condition of the vessel on survey should show that it is worth being taken in hand at all.

A further development has taken place in the arrangements which are being prepared at Whitehall in connection with the shipbuilding programme of 1897-98. Devonport, Portsmouth, and Chatham are each to be intrusted with the construction of a cruiser of an improved "Talbot" type. The new vessels are being designed by Sir W. H. White, and will be about 360 feet in length (10 feet longer than the "Talbot"), 54 feet in beam, and will have a displacement of about 6,000 tons. In the design of these vessels the aim will be to give them a greater coal-carrying capacity, greater speed, and a more extensive armament than can be claimed for the "Talbot" class. The new vessels will be fitted with the Belleville type of water-tube boilers, and will be capable of developing 10,000-I.H.P. It is expected that they will attain a speed of 20 knots.

As showing the improvement effected in the amount of coal carried by the new battle-ships, as compared with the quantity stowed in ships built twenty years ago, it may be mentioned that when the "Renown" was first designed arrangements were made for furnishing her with bunkers capable of stowing 800 tons of coal, which it was estimated would take her a distance of 4,400 knots, steaming at the rate of 10 knots an hour. As the vessel's construction advanced, it was seen that a much larger coal stowage could be provided without inconvenience, and a modification in the designs resulted in provision being made for stowing in the bunkers alone 1,280 tons, in addition to which, by utilising the wing spaces and the spaces over the protected deck, another 520 tons can be stowed, thus bringing the vessel's coal-stowing capacity up to 1,800 tons. With a full supply on board she will be able to cover a distance of 10,000 knots at a 10-knot speed, a coal endurance superior to that of any other battle-ship afloat. In view of these results, the new battle-ships provided for in the current year's programme of work will be provided with bunkers and other recesses for coal stowage on precisely similar lines to those of the "Renown," and as they will probably attain a higher speed their coal endurance when steaming under economical conditions will exceed that of the "Renown."

The Admiralty have decided on trying the invention of Mr. Holden, superintending engineer on the Great Eastern Railway, for using oil fuel. The torpedo-

boat destroyer "Surly" is at present in the dockyard hands at Portsmouth, having steel substituted for her copper tubes, and while the work is in hand the two after boilers are to be adapted for oil fuel, and will be tried in comparison with the two forward boilers, which are to consume coal fuel

With the object of applying a practical test to the value of search-lights as a protection to the entrances to Plymouth Sound, a series of experiments have lately been carried out in which the military forces had the assistance of the torpedo flotilla attached to the port. For some time past the officers connected with the Submarine Mining Establishment of the Royal Engineers at Elphinstone Barracks, Plymouth, have been giving their attention to the distribution of a system of electric lights arranged so as to cover the two approaches to the port of Plymouth and the entrance to the Hamoaze. Previous to these experiments no actual test of the scheme had taken place, and it is hoped to obtain some reliable data as to the efficient working of the scheme, and also whether it is capable of being improved. Owing to the experiments and the arrangements connected therewith being confidential, it is impossible to give any official details; but from observation and other sources a good deal has been gathered with reference to the experiments, to which considerable importance is attached. The torpedo-boat destroyers "Skate," "Ferret," "Lynx," "Opossum," and "Sunfish" left Devonport about 4.30 p.m. for Plymouth Sound, with the object of returning to the harbour by passing through the areas defended by two of the powerful lights at Picklecombe and Garden Battery under Mount Edgecumbe. The Royal Engineers and Royal Artillery furnished observers at Drake's Island, the Breakwater Fort, Penlee Point, the Redoubt, Maker, Bovisand, Staddon, and some of the other defences, for the purpose of taking rapid and accurate observations of the movements of the torpedo-boats. The experiments the first night were limited to the western entrance of the sound and harbour, and witnessed from a good point of vantage they were to all appearances most successful. The lights at Garden Battery commanded the whole of the waters of the sound as far as Drake's Island, and notwithstanding the weather was of the worst description for experiments of this kind, it was possible from the shore to discern small objects afloat. As the destroyers came within range of the defined area they were at first only faintly visible, but as they approached the fierce light which beat upon them from the Garden Battery, they were distinctly seen from stem to stern, and in actual warfare no difficulty would have been experienced in disabling them from one or more of the numerous defences guarding the western side of the fortress. In continuation of the recent experiments at Plymouth, a trial on a smaller scale was also made at the Needles, when the destroyers "Daring" and "Starfish" were employed, with instructions to rush past the Cliff End batteries on the Isle of Wight side and the Hurst Castle fortifications on the mainland, the channel being little more than half-a-mile wide. So strong was the glare of the light that for a distance of three or four miles the look-out was practically blinded, and it was only by intimate knowledge of the locality that it was possible to steer the vessels past buoys and other obstructions. The vessels were under orders to first pass the lights, and then to make a dash on Portsmouth, the gunners in the forts opening fire on the boats the moment they came within observation. The "Daring" shot past the forts unobserved, and the artillery officer in command has since inquired how it was done, as the "Starfish" was under fire for three minutes and three-quarters. Now in going out to sea the vessels steamed at 18 knots, four cables apart, and, assuming they adhered to this formation, there would have been no difficulty in detecting them; but the moment the "Daring" got outside the Needles she covered all her scuttle lights, extinguished her bow lights, and put on full speed, so that she passed the forts before she was expected, and, having no lights, eluded suspicion. The experiment, small in itself, is not without importance. If the raiding boat is

only to make a rush at the moment she is expected there is small chance of her success ; but in this instance, by putting out her lights and anticipating expectation by a few minutes, the "Daring" evaded the watch. It is uncomfortable to think that the "Daring" did precisely what an enemy would do, and that she was successful.—*The Times and Naval and Military Record.*

A Parliamentary Return has been published showing the fleets of Great Britain, France, Russia, Germany, Italy, and the United States of America, distinguishing battle-ships, cruisers, coast-defence vessels, torpedo-vessels, torpedo-destroyers, and torpedo-boats, whether built or building. The Return also shows date of launch, displacement, and armament reduced to one common scale. Vessels which appeared on June 2nd, 1896, in the official list of each navy as built or building are enumerated, including under the latter head those for which on that date money had been appropriated, and which were shortly to be laid down. Great Britain has forty-five battle-ships, eighteen armoured cruisers, eighty-seven protected cruisers, sixteen unprotected cruisers, fifteen coast-defence vessels, three special vessels, thirty-five torpedo-vessels, forty-two torpedo-boat destroyers, and three first-class torpedo-boats, all built ; and twelve battle-ships, twenty-nine protected cruisers, and forty-eight torpedo-boat destroyers building. France has twenty-nine battle-ships, nine armoured cruisers, twenty-three protected cruisers, twenty unprotected cruisers, fourteen coast-defence vessels (armoured), one special vessel, thirteen torpedo-vessels, and four torpedo-boats, all built ; and six battle-ships, one armoured cruiser, fourteen protected cruisers, three torpedo-vessels, and two torpedo-boats building. Russia has ten battle-ships, nine armoured cruisers, two protected cruisers, three unprotected cruisers, twelve armoured coast-defence vessels, four special vessels, sixteen torpedo-vessels, two torpedo-boat destroyers, and three torpedo-boats, all built ; and eight battle-ships, two armoured cruisers, three protected cruisers, four armoured coast-defence vessels, one special vessel, one torpedo-vessel, and one torpedo-boat building. Germany has twenty-one battle-ships, seven protected cruisers, twenty-two unprotected cruisers, eleven coast-defence vessels, one special vessel, five torpedo-vessels, and four torpedo-boats, all built ; and three battle-ships, one armoured cruiser, six protected cruisers, and two torpedo-boats building. Italy has thirteen battle-ships, one armoured cruiser, fifteen protected cruisers, one unprotected cruiser, two special vessels, fifteen torpedo-vessels, and three torpedo-boats, all built ; and two battle-ships, five armoured cruisers, one protected cruiser, three torpedo-vessels, one torpedo-boat destroyer, and one torpedo-boat building. The United States has five battle-ships, two armoured cruisers, thirteen protected cruisers, ten unprotected cruisers, nineteen armoured coast-defence vessels, two torpedo-vessels, and two torpedo-boats, all built ; and four battle-ships and two torpedo-boats building.

The most useful part of the Return is the method adopted in showing the armament of ships ; on the other hand, as the armour plating, coal supply, and speed are in no case given, and as there is nothing distinguishing a first-class battle-ship or cruiser from a third-class ship, the Return is of little value to non-experts and likely to prove misleading. It may be pointed out, however, that out of the forty-five battle-ships credited to England as built, twenty-two are first-class ships, and twelve more are building, two of which have been completed since the Return was printed, and another two will be completed by the end of the financial year ; making a total of thirty-four first-class battle-ships built and building. Of second-class battle-ships we have twelve, four of which only are armed with breech-loading guns for their main armament ; a fifth, the "Dreadnought," is soon to be re-armed with breech-loaders ; while a sixth, the "Alexandra," has a mixed armament of four 9·2-inch B.L. guns and eight 10-inch muzzle-loaders. The Admiralty have further called for estimates for re-arming the "Téméraire," so presumably a certain number of breech-loading guns will be substituted for the muzzle-loaders she at

present carries. Of the eleven third-class battle-ships, three only, the "Hero," "Conqueror," and "Bellerophon," are armed with breech-loaders for their main armament. Of the fifteen coast-defence vessels only three, the "Rupert," "Magdala," and "Abyssinia," are armed with breech-loaders.

Of the twenty-nine battle-ships credited to France as built, fourteen may be counted as first-class ships, and five more are building; making a total of nineteen first-class battle-ships built and building. Of second-class battle-ships she has eight, seven of which are, according to French classification, coast-defence vessels, but which our Admiralty have rightly considered battle-ships, as they are heavily armoured and armed; and there is one building, making a total of nine second-class battle-ships built and building. Of third-class battle-ships there are seven, but of these six have wooden hulls, which most materially reduces their value as fighting ships. Of the fourteen coast-defence vessels, eight are only armoured gun-boats.

Of the ten battle-ships credited to Russia as built, six are first-class ships, and six more are building; making a total of twelve first-class battle-ships built and building. Of second-class ships she has four built and two building, a total of six. Of third-class battle-ships she has none. Of the twelve armoured coast-defence vessels three are new armoured gun-boats, the remaining nine being old vessels of no great value. Of the four coast-defence vessels building three from their armour and armament might almost be counted as battle-ships; one indeed completed since the Return was printed has proceeded to the Mediterranean to strengthen the Russian Squadron in those waters; the fourth vessel is an armoured gun-boat.

Of the twenty-one battle-ships credited to Germany as built, four are first-class battle-ships, and there are two others building; making a total of six built and building. Of second-class battle-ships she has three; of third-class battle-ships there are seven, and of fourth-class ships seven, with one building. Of these so-called fourth-class battle-ships, it should be observed that they form a special homogeneous squadron of small powerful vessels, and have been built more especially for service in home waters; they are of a type peculiar to the German Navy, and are all new. Of coast-defence vessels, Germany possesses eleven, all small armoured gun-boats of the same type, the bulk of them being twenty years old.

Of the thirteen battle-ships credited to Italy as built, ten are first-class ships, and there are two more building; making a total of twelve first-class battle-ships built and building. Of third-class battle-ships she has three.

Of the five battle-ships credited to the United States as built, three are first-class ships and two are second-class. There are further building six more first-class battle-ships. Of the nineteen coast-defence vessels, twelve are single-turreted monitors armed with smooth-bore guns and more than thirty years old, and practically valueless for fighting purposes; of the remaining seven, the "Katahdin" is a ram with no heavy guns, and the "Monterey" is the only vessel of really modern construction, as the other five although only lately completed were laid down at intervals between 1876 and 1883, and for many years all work was stopped on them; they are all five monitors with two turrets, but with excessively low free-board, four of them carry four 10-inch guns, while two, the "Monterey" and "Puritan," carry four 12-inch.—ED.

ARGENTINE REPUBLIC.—The new first-class armoured cruiser "Garibaldi" was laid down originally by the firm of George Ansaldo and Co., of Genoa, for the Italian Government. In accordance with the contract, concluded in March, 1893, the firm was to furnish to the Italian Government an armoured twin-screw cruiser of 6,840 tons displacement, with engines complete and ready for sea within five years from date, the armour to be provided by the Royal Navy Department, and to be fixed in position by the firm. The artillery, and also a large number of the internal fittings were excluded from the contract. The "Garibaldi" was commenced on the stocks at Sestri Ponente, vacated by the "Liguria," launched on

8th June, 1893. The construction of the machinery was commenced by the firm at the same time at the Sampierdarena works. The work was carried on with a promptitude hitherto unknown in Italy, so that the ship was already well advanced and ready for launching in June, 1895. Soon after the launch the cruiser, hitherto known as the "Giuseppe Garibaldi," was turned over to the Argentine Government and re-baptised as the "Garibaldi." Under the new conditions the firm had to complete the cruiser in a very limited time, and to furnish the armour, armament, and everything complete. By the 18th February, 1896, the ship was completed with armour, armament, and all her electric machinery, etc.; and proceeded out of harbour for the first time to carry out the trials of her machinery.

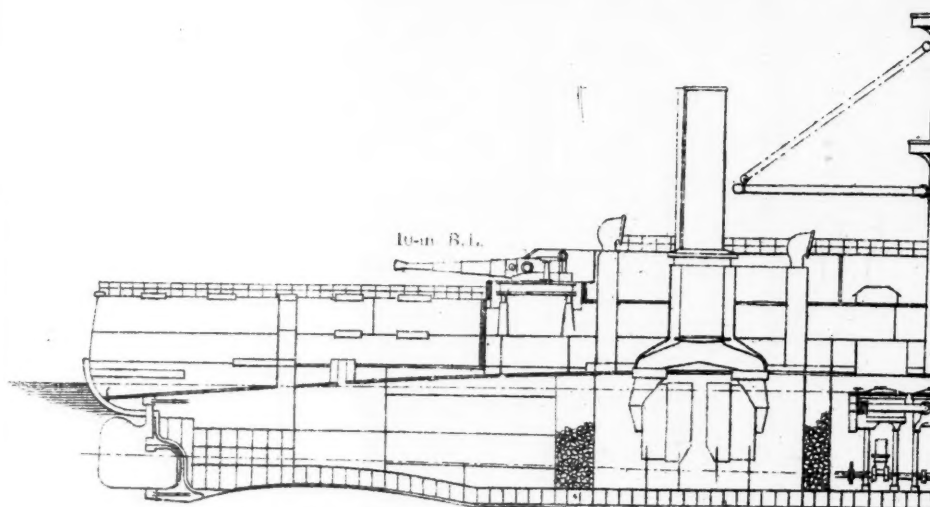
The "Garibaldi" is an armoured cruiser of a type approaching that of line-of-battle-ships. In displacement and armament she is not unlike the English "Edgar" class; but these ships have not a central armoured battery, as well as special protection for single guns. The appearance of the ship complete is that of a battle-ship proper with a high freeboard. The dimensions of her hull are as follows:—Length between perpendiculars, 328 feet 6 inches; beam (maximum), 59 feet 3 inches; depth of hull from line of upper-deck beams, 39 feet 4 inches; average load draught, 23 feet; displacement, 6,840 tons.

The engines are twin-screw triple-expansion, with a collective power of 13,000-I.H.P. The hull is constructed of homogeneous iron, supplied almost entirely by the Italian firms, Società Ligure Metallurgica of Sestri Ponente and Società di Acciaierie di Terni. The stem and stern castings were provided by the Vanzetti Sagramoso foundry of Milan, and are of cast steel. The heavy forgings for anchor gear, etc., were supplied by George Ansaldo and Co., of Sampierdarena. The ship has a double bottom, which extends nearly the whole length of the vessel up to the protective deck; it is divided into numerous water-tight compartments, each of which is provided with flooding and pumping-out arrangements. The armoured, or rather protected, deck runs from stem to stern of a thickness varying from 2 inches to 1 inch. All the openings in this deck are provided with hatches of the same thickness as the deck, in addition to protective gratings. Above the protective deck, corresponding very nearly with the line of flotation, is the corridor deck, then the battery deck, above which is the upper deck. The latter, covered with teak, has a thickness of 8 inches in the central portion for protection of the battery below. In the corridor and battery at the central portion, for a length of 175 feet, is formed an armoured redoubt containing a part of the armament, the bases of the barbettes for the heavy guns, and some of the reserve bunkers. Above the upper deck are the light superstructures forming the supports for the fore bridge, on which is the armoured conning tower; and above it the usual chart-house, steering-wheel, compass, telegraphs, etc. There is a single military mast in the centre of the ship, having two fighting tops armed with light guns. On the middle line forward and aft are the two barbettes containing the two 10-inch guns. There is a flush deck forward and aft, so as to have the field of fire perfectly clear for these heavy guns.

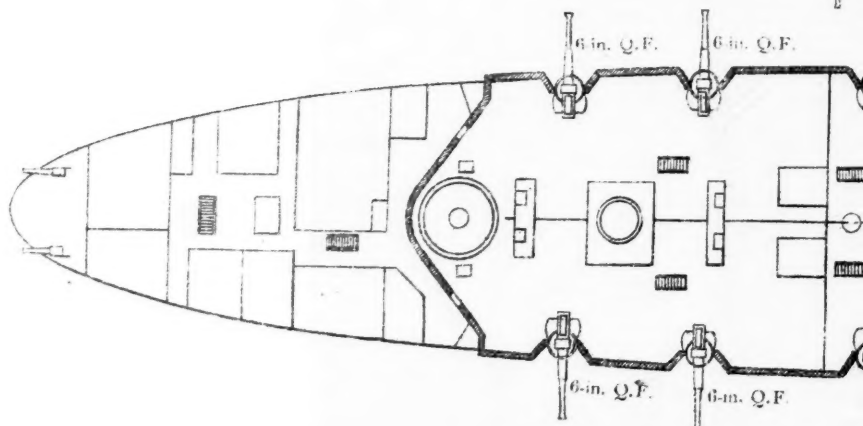
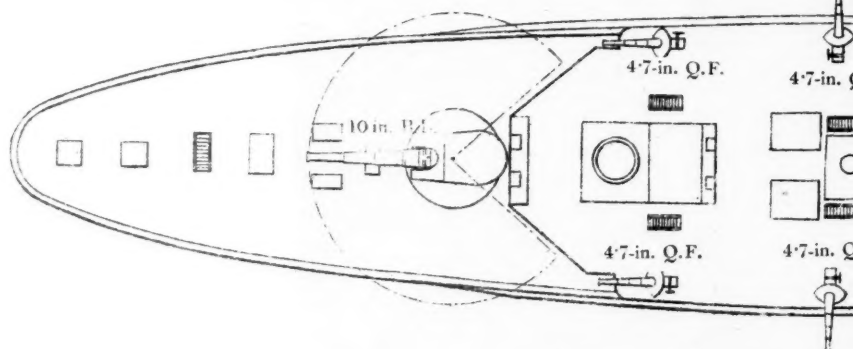
The vertical armour of the "Garibaldi" is of hardened steel, provided by the Terni steel works, and forms a belt at the water line, reaching up to the upper deck at the centre with two transverse armoured bulkheads, one forward, the other aft, and enclosing the armoured central redoubt. The thickness of the armour is everywhere 6 inches. The armament consists of the two 10-inch guns above mentioned, each of which is protected by a heavy revolving shield, so that the system does not differ much from that of the turret. There are also ten 6-inch quick-loading guns in the battery behind armour; six 4.7-inch quick-loading guns on the upper deck, three each side, protected by light shields; the two forward and two after ones being capable of training in the line of keel; ten 3-pounder Q.F. guns, two on the lower top, four on the superstructure, two aft in the admiral's quarters, and two forward in the battery; ten 1-pounder Q.F.

guns, of which two are in the upper fighting top, the others distributed on the upper works and fore bridge. There are in addition two Maxim-Nordenfeldt guns in the upper top, and four torpedo launching-tubes above water on the corridor deck in the battery, two at the forward and two at the after extremity of the redoubt. The whole of the artillery was furnished by Armstrong of Pozzoli; the torpedo-tubes by the firm of Carmine de Luca and Sons, of Naples. The arrangement of the armament was under the special direction of the "Direction of artillery and submarine mines" of the arsenal at Spezia, with the guidance of the technical *personnel* of the above Direction courteously conceded to the firm from time to time. As a result of successive experiments, undertaken with this end in view, the ventilation of the "Garibaldi" has proved to be complete and in every way satisfactory. Wherever it was possible the maximum advantage has been taken of natural ventilation, and in other cases to assist the circulation by electric ventilators, constructed in accordance with the latest and most approved data available. To preserve the simplicity of the installation a single type of ventilator has been adopted, with a capacity of 150 to 200 cubic metres per minute. Of these there are six, each absorbing a current of 45 ampères at 65 volts at from 900 to 1,000 revolutions.

The propelling machinery is contained in six principal compartments below the protective deck. The two forward and two after compartments, which are separated by a water-tight longitudinal bulkhead, each contains two cylindrical return tube boilers with four furnaces arranged back to back. The two central compartments contain the main engines with their numerous accessories. Altogether there are therefore eight boilers and thirty-two furnaces. To provide against the danger of the whole of these compartments being flooded by serious injury to one of them, there are no bulkhead doors between the engine-rooms and boiler-rooms, nor between the various boiler-rooms at the level of the platforms. Communication with the former is provided on the battery-deck, and with the latter on the corridor deck. At the height of the cylinder covers there is a kind of longitudinal passage or gallery, which alone admits of a less indirect means of communication between the above-mentioned compartments. Each of the main engines is of Maudslay's three-cylinder type, the diameter of the cylinders being 3 feet 3 inches, 4 feet 9 inches, and 6 feet 8 inches, the length of stroke 3 feet 3.5 inches. In each engine-room there is a bronze condenser with 1,780 square feet cooling surface, also an auxiliary condenser, a centrifugal circulating pump driven by a compound engine which also works an auxiliary air pump, the main air pump being driven off the principal engines. There are also the duplex feed pump, two double-cylinder bilge pumps Admiralty type; a small air and circulating pump driven by the same engine for the auxiliary condenser; and lastly, an evaporator for keeping up the supply of fresh water. Besides the two duplex main feed pumps, one in each engine-room, there are also four smaller duplex pumps, one in each boiler-room. The boilers have a total grate area of 234 square feet, with 6,500 square feet of heating surface, and can be worked by forced draught in the ashpits, supplied by eight powerful centrifugal ventilators. The steam pressure in the boilers is 155 lbs. per square inch (10.8 kilos per square centimetre). Each engine drives a four-bladed screw 16 feet in diameter, with a 22 feet 9 inches pitch, constructed of delta metal. The whole of this machinery was constructed by the firm of Ansaldo and Co., of Sampierdarena, and for quality of material left nothing to be desired. The auxiliary machinery was for the most part supplied by the same firm from their own designs, as for example the steering gear, anchor gear, distillers, the large bilge pump, the steam winches for deck hoists, bath and head pumps, etc., besides four hand pumps on Downton's system. The whole of the electric plant was made in Milan, the auxiliary electrical apparatus for working the heavy guns by Savigliano. It is only just to observe that the entire installation was carried out with the advice and assistance and in accordance with the plans of the directors of the arsenal at Spezia, more particularly under the

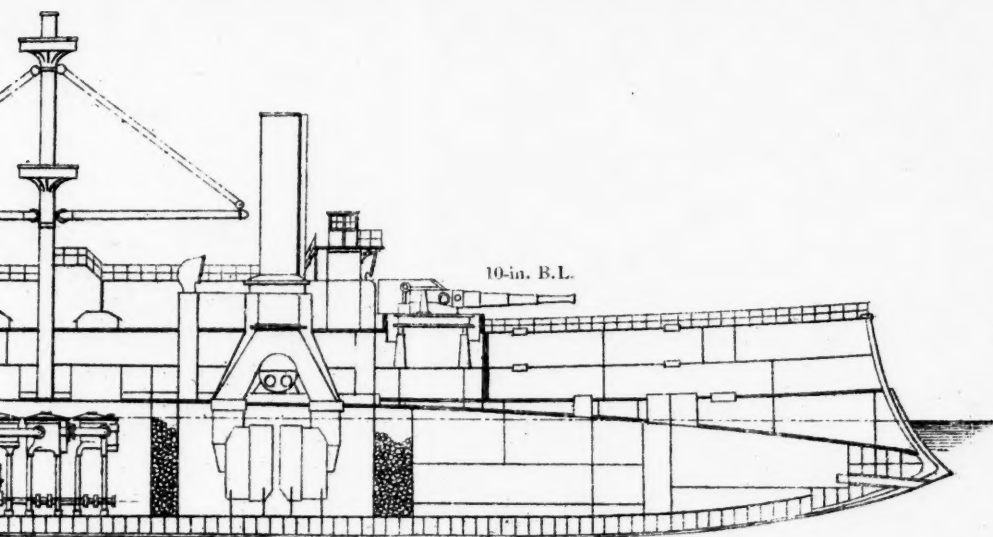


LONGITUDINAL SECTION

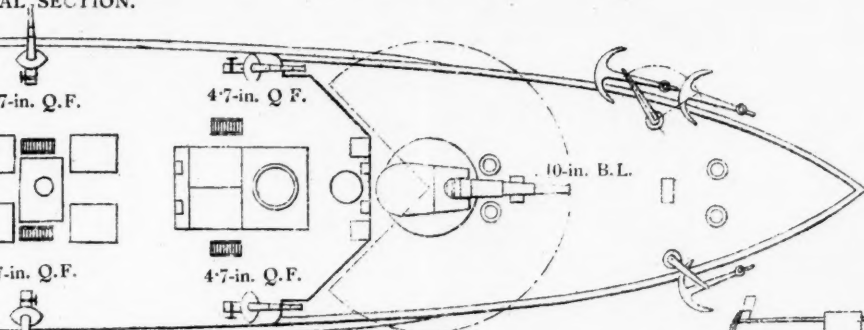


BATTERY PLAN

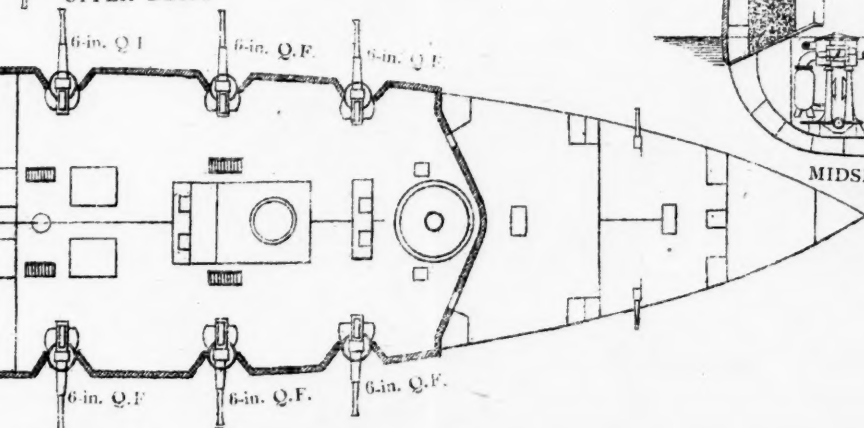
PROFILE AND DECK PLANS OF NEW ARGONAUT



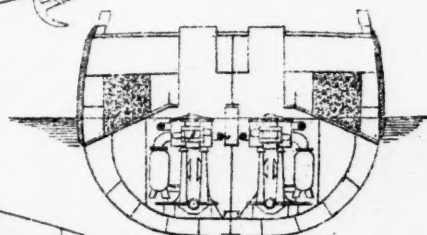
LONGITUDINAL SECTION.



UPPER DECK.



BATTERY DECK.



MIDSHIP SECTION.

ARGENTINE ARMOURD CRUISER "GARIBALDI."

guidance of Professor Pasqualini, one of the directorate. The electrical energy is derived from four 4-pole dynamos each driven by a compound vertical engine of the Tosi type, coupled directly by means of an elastic coupling. Each machine has an output of 300 ampères at from 65 to 70 volts, with 280 revolutions per minute. There are for illuminating purposes 750 lamps of various powers distributed as follows:—

On the upper deck	112 lamps of 12 candle-power.
On the battery deck	280 „ 12 „
On the corridor deck	135 „ 12 „
On the protective deck	18 „ 12 „
Below protective deck	247 „ 12 „
Masthead lights (Scott's system) ...	4 „ 12 „
Position, head lights, admiral's, etc. ...	8 „ 25 „
Working lights	8 „ 25 „
Elliot's telegraph	10 „ 12 „

The two large search-lights are 40,000 candle-power each, the small one of 20,000 candle-power. It is very satisfactory to be able to repeat that the provision and installation of the electric plant are due to two national firms—the Tecnomasio, of Milan, and Savigliano, of the same city. The first has supplied the electric lighting and signalling plant; and the other the motive apparatus for ventilators, elevators, training gear for guns, etc. The engine and speed trials of the ship took up a considerable period of time; the first trials took place on the Government measured mile near Spezia, and the results did not come up to expectations. Applications were then made for a new measured mile trial to be run elsewhere, the depth of water at Spezia being only about 10 fathoms, and less than that at Stokes Bay, which in England is not considered sufficient for the trials of large cruisers. The new mile before the port of Genoa, with a depth of water of from 25 to 35 fathoms, thanks to the energy of Messrs. Cassanello and Lasagna (the first-named director of the hydrographical department at Genoa; and the second an ex-naval officer), was very quickly prepared. From various reasons—bad weather, gun trials, etc.—the speed trials did not take place until the 6th July of this year. Six runs were made, three in each direction, the mean speed being 19·948 knots with an I.H.P. of 13,384, the revolutions 154·5 starboard and 154·2 port. Not more than 13,000-I.H.P. could be obtained before the trials of 6th July when the admission of the high-pressure slide had been increased. It is very satisfactory to think that such good results should be produced by the work of Italian industries, from the designs of Engineer Masden, now inspector of naval engineering, and under the direction of Engineer Bigliati, inspector in the Naval Reserve; also of the many other Italian engineers, worthy of special mention, as, for instance, the manager of George Ansaldo and Co., of Sampierdarena, with Messrs. Ornati and Petrini.

As we have sought to impress the fact that this ship and nearly everything on board her are essentially Italian, we are sorry to have to confess that the design of the main engines is an exception. Our Government, for whom the ship was first designed, wished the engines to be identical with those of the “Carlo Alberto,” being constructed in the Royal Yard at Spezia, and the engines for which were to be constructed by Ansaldo from the designs of Messrs. Maudslay, Sons and Field, in England. Naturally the design of the “Carlo Alberto's” engines appears to be worthy of the high reputation of the firm. Anyhow there is room to believe that if the construction and design of the “Garibaldi's” engines had been an entirely national undertaking, the results in this case, as well as in all the others, would have been as favourable as we could have wished for.—*Rivista Marittima*.

AUSTRIA-HUNGARY.—*A New Invention for Torpedoes*.—The following extracts from a notice in the *Mittheilungen aus dem Gebiete des Seewesens*, under the

above heading, and bearing the well-known signature J. Heinz, may be of special interest to some of our readers at the present time :—

"Our Fatherland, in which the auto-mobile fish torpedo originated, has recently distinguished itself by a new invention, whereby the efficiency of this already remarkable weapon will probably be greatly advanced.

Mr. L. Obry, of Trieste, till recently of the Royal and Imperial Navy, and who formerly served in Messrs. Whitehead's firm in Fiume, has invented an apparatus for preventing the deflection of the Whitehead torpedo out of the line of fire. That this invention is likely to be of the widest importance, everyone entrusted with the care of Whitehead torpedoes will allow. It is not only from the point of view of the perfection of the torpedo, which has already many brilliant performances to its credit, but the invention will obviate the well-known difficulty and delay in mobilisation, viz., that of adjusting the torpedoes at the range in readiness for war; also the fatal necessity of preservation against dampness, which latter has been the cause of most of the failures of the auto-mobile compressed-air driven torpedoes (see note at end). Should a torpedo, by faulty impulse, take an abnormal dive or come to the surface, in almost every case a considerable deflection out of the line of fire is the consequence. By means of the "Obry" apparatus this deflection will be prevented, as also the ill effects on the path of the torpedo of discharge in a sea-way.

The apparatus at present consists of a gyroscope, which is set in action at the moment of discharge of the torpedo. The gyroscope works by means of a servo-motor and a pair of movable vertical rudders which take the place of the usual fixed rudders. If the torpedo from any cause, internal or external, is deflected out of the line of fire, the gyroscope, by maintaining its axial position in the line of fire, acts on the slide of the servo-motor, and by means of the vertical rudders steers the torpedo back again. The course of the torpedo is by this means of a lateral wave form, with ordinates at the maximum not more than 2 metres in length. The apparatus has the advantage that it is not heavy, and can without difficulty be fitted to any torpedo. At first the inventor had great difficulty in making the apparatus sufficiently accurate in adjustment; after this was overcome the results were at once apparent. A torpedo fitted with it was discharged on the broadside from a torpedo-boat at full speed, without any previous adjustment at the range; the outer projecting guide bar (spoon bill) of the launching tube was purposely removed. Under these conditions the torpedo must enter the water at a very large angle and take up a great deal of so-called "negative" deflection, as it was proved the ordinary torpedo actually did. With the "Obry" apparatus, however, the torpedo, although it took up the same initial deflection on discharge, was immediately steered back again to the original direction of the line of fire. The same advantage was gained in the "Howell" torpedo, but other defects apparently have outweighed this advantage, as we hear the United States have decided to adopt the Whitehead in preference to it. In order to obtain more information as to the worth of this invention, further trials were carried out at Messrs. Whitehead's launching station in Fiume. The apparatus was fitted to an 18-inch torpedo constructed at random out of a Japanese head, the air-chamber of an experimental torpedo belonging to the firm, and the after-body of an ordinary 18-inch torpedo. A second apparatus was fitted to another 18-inch torpedo.

Runs from the submerged frame were carried out at various distances, and the invention answered well. If it was put in action the torpedo held its direction very satisfactorily, but as soon as it was cut out the deflections began, as is the usual case with torpedoes not properly adjusted. The close of the experiments consisted of alternate shots from the frame and above-water gun at a distance of 2,000 metres. In preparation for this course the reducing valves of both torpedoes were set for a working pressure of 20 kilogrammes per square centimetre, corresponding with a speed of 21 knots; the counter-gear was also altered to suit

the increased range. The results of these runs were excellent ; after a small injury to the apparatus had been repaired the target was hit every time, and dead-centre hits were made. We may observe here that the "Obry" apparatus is very simple, but must be very accurately fitted, which is not possible without special means ; such means were not at the disposal of either the inventor or Messrs. Whitehead, so that the apparatus described here must be considered as rather primitive. The most brilliant feature of the whole trials was the success with which runs were recently made from a torpedo-boat at 25 knots speed, both from the broadside and at various angles with the line of keel. The torpedoes were set for 1,000 metres, and an admission of 40 atmospheres, the target being placed at 800 metres. At first the torpedo took up a little deflection, but after the defect had been set right by the maker of the apparatus, Mr. V. Czerny, the results were exceedingly satisfactory. The torpedo passed not more than from 2 to 3 metres off the centre of the target, and there was no deflection on the broadside, so that the line of aim and line of fire could be considered as identical. The torpedo was then purposely made to jump out of the water at the commencement of its run, without in any way influencing its direction.

The results which may accrue from Mr. Obry's invention are not at present to be foretold with certainty. In our opinion, at any rate, the expression which fell from an Italian naval officer to the effect that the Whitehead torpedo has become by this invention a naval weapon of the fullest importance, does not appear in any way extravagant. It would also appear that those who have endeavoured to ignore the torpedo, and to comfort themselves with soothing arguments against it, are put by this invention entirely out of the field. The first to profit by the influence of this new apparatus will undoubtedly be the torpedo-vessels, as they must grow in importance directly in proportion with the reliability of their principal weapon.

We may consider that in a short time we shall doubtless possess torpedoes of 2,000-metre range and considerably greater speed (see note at end) than the present torpedoes, with every necessary qualification of reliability in direction. The distance at which a torpedo-boat will be dangerous to a ship will therefore be doubled ; and their attacks will be made with considerably reduced risk to themselves than at present.

The constructors of submerged torpedo-vessels for coast-defence purposes will also find their task considerably lightened. In fights between ship and ship, the torpedo is acknowledged to play the rôle of a chance weapon only ; and we give them to our own ships solely in order that they may not be behind any foe with which they may have to contend in this respect. The holders of these views—the number of which has greatly increased of late years—must shortly submit to better teaching through the "Obry" apparatus. Simple tactical experiments will soon show what an important part a properly protected torpedo installation (with long range absolutely reliable torpedoes) may play, not only in duels between ships, but even in fleet engagements.

Many may ask the question why we should not become the sole possessor of this important invention, and so secure to our own fleet a certain superiority. We cannot, however, agree to this view of the case, and believe that our Government has acted with wise moderation in the matter. Such a monopoly could only be justified by a pressing political necessity which portended an immediate outbreak of war ; under ordinary conditions it would be absolutely valueless. The secret could hardly in any case be kept for any considerable time ; other countries would soon have constructed similar apparatus of their own, and the opportunity for our own industries to reap the benefit would have been lost, and in which they can now share.

For these reasons no difficulty was thrown in the way of the inventor making the best use of his invention also in the neighbouring and friendly State, Italy. The Italian functionaries on the occasion showed that they knew how to appreciate

and respect the property of a friendly State; and throughout the trials stuck to the interests of the inventor in the most loyal manner possible.

NOTE.—From the views expressed at two places indicated in the text, the writer in the *Mittheilungen* would appear to indicate that the torpedoes would be driven as well as controlled by some other power than compressed air. We gather, however, from the trials that the sole object of the gyroscope, which it is understood derives its motive-power from a coiled spring, like an ordinary clock spring, is to maintain the direction of the torpedo in the horizontal plane only. It is not easy to see how the speed of the torpedo can be favourably affected by this invention.—TR.

FRANCE.—The following are the principal appointments which have been made: Vice-Admiral—L. V. Alquier placed on Retired List. Rear-Admiral—Gigault de la Bédollière to the command of the Naval Division in China. Capitaine de Vaisseau—P. Meunier to "Bayard."—*Moniteur de la Flotte*.

The new first-class battle-ship "Jauréguiberry" has, after repairs, successfully concluded her gun trials. The new torpedo-depôt-ship "Foudre" has been continuing her trials successfully; on the 28th October, under forced draught, with the engines making 107 revolutions and developing 11,930-I.H.P., a mean speed of 19.5 knots was maintained; according to the terms of the contract the I.H.P. was to be 11,500, but this was exceeded by over 400. The two new first-class battle-ships "Carnot" and "Charles-Martel" have satisfactorily concluded their gun trials.

The Minister of Marine has directed that the new battle-ship "Henri IV." and the coast-defence ship "Requin" are to have Niclausse water-tube boilers; these boilers have given very satisfactory results on board the second-class cruiser "Friant," and it is believed that they will be the type of water-tube boiler which will be adopted for general use in the Navy.

Great alarm was created at Brest on the morning of the 30th ult. by the discovery of a fire in the stern of the transport "Drome," which was in dock for its bottom to be cleaned. There were 60 barrels of powder on board, and an explosion was feared. Firemen and soldiers were sent for, and in three hours the flames were got under. The fire must have been smouldering all night without having attracted the attention of the watch. The stern part, including three officers' cabins, is almost entirely destroyed.

The Superior Council of the Navy (Conseil supérieure de la Marine), created in 1889, has been reconstructed, and by a recent decree is now composed of the following Officers:—Vice-Admirals Duperré, Ricunier, de la Jaille, Brown de Colstoun, Gervais, and de Prémèsnil; and ex-officio Vice-Admirals Bernard (Minister of Marine) and Sallandrouze de Lamornais (Chief of the General Staff of the Navy).

On the 19th November, during some manœuvres in the Bay of Douarnenez, two torpedo-boats of the mobile-défense of Brest, No. 61, commanded by Enseigne de Vaisseau Copi, and No. 83, Lieutenant Le Gac, came into collision, resulting in the sinking of No. 83, with loss of one man drowned and three injured. No. 83 was struck on the starboard quarter, and her water-tight bulkhead being driven in, she filled and sank almost immediately; she lies in 15 fathoms of water, and an attempt is to be made to raise her. A Court of Enquiry is investigating the matter. No. 83 belongs to a type of 50 boats, 33 metres long, built about 10 years ago, which has an unlucky reputation. Two of this class, Nos. 102 and 110, have been lost, one in the Mediterranean, capsizing and foundering with the greater part of

her crew; the other being lost in the Channel, nothing ever having been heard of her. In the present case, however, the stability of No. 83 had nothing to do with her loss.

The following is the report of the experimental firing carried out from the "Dragonne" at the old transport "Panama," off Toulon, on the 5th November, referred to in last month's Notes. The hold of the "Panama" was filled with empty casks to increase her flotation, and she was moored 750 yards south-west of Cape Brun. The "Dragonne" took up a position between the shore and the transport. The practice was divided into eight series of five rounds each, fired at known distances, half at anchor and half under way; the firing commenced at 5 p.m. at 800 yards, representing the maximum distance of distinct visibility. There was a considerable swell, and rolls of 20° were noted on board the "Dragonne." After each series the "Panama" was visited by the experimental committee, and the effects of the fire noted.

The following table of results is given:—

	Distance. Metres.	No. of Rounds Fired.	No. of Hits.
At Anchor ...	1500	5	1
Under way ...	1500	5	1
At Anchor ...	1000	5	2
Under way ...	1000	5	3
At Anchor ...	500	5	4
Under way ...	500	5	3
At Anchor ...	300	5	4
Under way ...	300	3	3
Totals ...		38	21

The percentage of hits to rounds fired was thus 55, which was considered very satisfactory.

Before the total number of 40 rounds proposed could be fired, the old transport, notwithstanding the preparations that had been made to keep her afloat, filled and sank. Her loss is considered of little consequence; she had already been put up for sale, and failed to obtain a purchaser at 15,000 francs (£600), as the expense of breaking her up would absorb the estimated value of her materials.

The officers of the Northern Squadron, with the approval of the Minister of Marine, are about to offer for the acceptance of the Emperor and Empress of Russia, an album containing photographs of the ships-of-war, assembled at Cherbourg, in honour of their Majesties' recent visit.

The new "École des hautes études de la Marine" has been established at 13, Rue de l'Université, Paris, and was formally opened by Admiral Besnard, Minister of Marine, on the 1st December.

M. Lockroy, former Minister of Marine, has made certain so-called revelations on the condition of the French Navy. The sitting of the Commission of the Budget which is investigating these statements, is being held in secret; but M. Lockroy has informed a reporter of *Le Temps* that the chief points to which he is calling attention are the condition of the ships' boilers, the condition of the torpedo-boats attached to the mobile-défense, and the necessity for a modification in the designs of the ships building on account of the introduction of high-explosive shells. To put these matters on an efficient and proper footing, he asks for the voting of a special credit of 100,000,000 francs.

According to the Revised Estimates for 1897, the following ships will be completing and building during the ensuing year:—First-class battle-ships—"Jauréguiberry," practically complete, but should have been ready by 30th

January of present year; "Charles-Martel," practically complete, but should have been ready by 1st April of present year; "Carnot," practically complete, but should have been so by 20th April of present year; "Masséna," to be completed by end of 1897; "Bouvet," to be completed in early part of 1898; "Charlemagne," to be completed some time in 1898; "Gaulois," in 1899; "Saint-Louis," in 1900. Second-class battle-ships—"Henri IV." in 1901; "A 3," no date for completion fixed. First-class armoured cruisers—"Bruix," practically complete, but should have been ready 1st May of present year; "Pothuau," should have been ready end of present year; "Jeanne d'Arc," to be completed end of 1899; "C 3," no date for completion fixed. First-class protected cruisers—"D'Entrecasteaux," to be completed end of 1897; "Guichen," August 1898; "Châteaurenault," October, 1898; "D 2" and "D 3," no date fixed for completion. Second-class cruisers—"Bugeaud," practically complete, but should have been ready 30th June of present year; "Descartes," should have been completed 25th March of present year; "Du Chayla," ready some time in 1897; "Catinat," February, 1897; "D'Assas," February, 1897; "Cassard," November, 1897; "Protet," September, 1898. Third-class cruisers—"Galilée," early part of 1897; "Lavoisier," December, 1897; "D'Estrées," in 1900; "R 2," no date yet fixed for completion. Torpedo cruisers—"Fleurus," should have been completed by end of present year. Torpedo-depot-ships—"Foudre," should have been completed April of present year. Aviso first class—"Kersaint," April 1898. Torpedo-gunboats—"Dunois," "La Hire," "Durandal," and "Hallebarde," all in 1898; and "M 2," no date for completion fixed. Torpilleurs-de-haute-mer—"Mangini," should have been completed end of present year; "Cyclone," in 1898. Submarine-boats—"Gustave Zédé" on trials; "Morse," no date fixed for completion. Aviso-transport—"Vaucluse," end of 1900. First-class torpedo-boats—Nos. 201 to 205 in 1897; Nos. 206 to 211 in 1898; "P 31" to "P 34," no date for completion yet fixed. First-class gun-boat "T1," no date yet fixed for completion.—*Le Temps, Le Moniteur de la Flotte, and Annexe No. 6 du Projet de Loi (Budget des Dépenses du Ministère de la Marine).*

GERMANY.—The following are the principal appointments and promotions which have been made: Vice-Admirals—Koester to command of the Baltic Naval Station; Thomsen to command of First Squadron. Rear-Admirals—H.R.H. Prince Henry of Prussia to command of Second Division of First Squadron; Von Arnim to Inspector of First Naval Inspection; Barandon to be Chief of the Staff at the Ministry of Marine. Kapitän zur See—von Eichstedt to "Brandenburg"; von Prittwitz und Gaffron to "Wörth"; Graf von Baudissin to "Kurfürst Friedrich Wilhelm"; von Frantzius to "Weissenburg"; Geissler to be Chief of the Staff to First Squadron; Schmidt to "König Wilhelm"; Breusing to "Sachsen"; Ascher to "Württemberg"; von Ahlefeldt to "Stein"; A. Thiele to "Stosch"; Hofmeier to "Gneisenau." Korvetten-Kapitän—Derzewski to "Siegfried," central ship of the fourth-class battle-ship Reserve Division of the North Sea; Lilie to "Jagd"; Friedrich to "Wacht"; Stiege to "Moltke"; Becker to "Arcona"; Vüllers promoted to Kapitän zur See.—*Marine Verordnungsblatt.*

The following is the winter constitution of the Fleet:—

FIRST SQUADRON.

First Division—

First-class battle-ships—"Kurfürst Friedrich Wilhelm" (flag-ship of Commander-in-Chief); "Brandenburg," "Weissenburg," "Wörth."

Despatch-vessel—"Jagd."

Second Division—

Second-class battle-ship—"König Wilhelm" (flag-ship of Rear-Admiral).

Third-class battle-ships—"Sachsen," "Württemberg."

Despatch-vessel—"Wacht."

TRAINING SQUADRON.

Cruising Frigates—"Stein," "Stosch," "Moltke," "Gneisenau."

FOREIGN STATIONS.

Cruising Squadron—

Second-class battle-ship—"Kaiser" (flag-ship of Rear-Admiral Commanding).

Second-class cruisers—"Irene," "Prinzess Wilhelm."

Third-class cruiser—"Arcona."

In China.

Fourth-class cruiser—"Cormoran."

In Australia.

Fourth-class cruisers—"Falke," "Bussard."

Surveying vessel—"Möwe."

East Coast of Africa.

Fourth-class cruisers—"Seeadler," "Condor."

West Coast of Africa.

Gun-boats—"Habicht," "Hyäne."

SHIPS FOR SPECIAL SERVICE IN COMMISSION IN HOME PORTS.

At Kiel.

Fourth-class battle-ship—"Hagen."

Third-class cruiser—"Gefion."

Imperial yacht—"Hohenzollern."

At Danzig.

Reserve Division—

Armoured gun-boats—"Mücke," "Natter," "Crocodil," "Scorpion."

At Wilhelmshaven.

Fourth-class battle-ships—"Beowulf," "Siegfried."

Second-class cruiser—"Kaiserin Augusta."

The Government are trying to obtain the sanction of the Reichstag for a special loan in order to make some considerable additions to the fleet. There are only one or two vessels at present undergoing their trials, the principal being the two new fourth-class battle-ships "Odin" and "Ægir." The only vessel launched during the year has been the first-class battle-ship "Kaiser Friedrich III.," at Wilhelmshaven. She is being completed afloat, and the Ersatz "Friedrich der Grosse," a sister-ship, has been laid down at the same yard. The other vessels in hand are the first-class armoured cruiser Ersatz "Leipzig" (10,300 tons), at Kiel, and the three second-class cruisers Ersatz "Freya," "K," and "L," as well as two other second-class cruisers "M" and "N" (in hand at Danzig and Stettin), a fourth-class cruiser, "G," a torpedo-division boat or destroyer (at Chiswick), and eight torpedo-boats, for the laying down of which provision was made in the current votes. The ships proposed for 1897-98 are a battle-ship, Ersatz "König Wilhelm" (of the "Friedrich III." type), two other second-class cruisers, a despatch vessel to replace the "Falke," two gun-boats to replace the "Hyäne" and the "Iltis," which last was lost off the Shantung Peninsula on July 23rd, another torpedo despatch vessel, and eight more torpedo-boats.

Some important gun trials took place recently at Krupp's artillery range at Meppen, at which the Kaiser, Prince Henry, and several naval officers of rank were present; and as the result, an Imperial Decree was issued on 27th October, directing that Krupp's new Q.F. guns of 15, 21 and 24 centimetre calibre are to be introduced into the Navy. 15-centimetre (5·8-inch) Q.F. guns are already in use in the fleet, but the new weapon has a much greater initial velocity, and is said to be able to pierce a 14-inch plate at 1,000 yards. The 21-centimetre Q.F. gun is practically the same as the Elswick 8-inch Q.F. gun, but the new 24-centimetre (9·4-inch) is the largest Q.F. gun yet constructed, and it is reported to be capable of piercing a 28-inch plate at 1,000 yards.

The first-class ironclads "Kaiser Friedrich III." and Ersatz "Friedrich der Grosse" are to carry four of the new 24-centimetre guns in their barbettes; the first-class armoured cruiser Ersatz "Leipzig" will carry the same in armoured turrets, and the five new second-class cruisers two 21-centimetre guns each also in armoured turrets. Each of the two above-mentioned first-class ironclads is also to have eighteen of the new 15-centimetre guns, twelve in armoured single casemates, and six in armoured turrets; the Ersatz "Leipzig" to have twelve such, six in armoured single casemates and six in armoured turrets, and the five second-class cruisers four in armoured single casemates, and four in armoured turrets.

As the result of the experiences drawn from the battle of the Yalu, the use of wood has been much restricted in the new German ships. According to Herr A. Dietrich, Constructor-in-Chief of the Imperial Navy:—

"In the outfit and construction of the new German ships wood is used only for a few minor points. Wooden deck planks are no longer laid, steel deck plating is covered with linoleum, sometimes over a layer of cork. In the crews' quarters the sides of the ships are not ceiled; in the officers' rooms the ceiling is made of steel plates $1\frac{1}{2}$ millimetres thick, and lined with cork. For cabin bulkheads the steel is covered with thin woollen cloth, and with cork lining underneath where it is desirable to exclude sound or lower the temperature. Where heat is radiated from engine or funnel casings, cork lining is resorted to. All wood is removed from the ammunition rooms, save the racks for shells and powder charges, which are still made of wood. For all ladders and steps steel is used. The handrails on the conning bridges are no longer of wood, but of some other material which will not burn or splinter, and which is more agreeable to the touch of the hand than steel or brass. Chart-houses and captains' rooms on bridges are entirely made of steel, and fitted out with non-combustible materials. Since all such changes will be a little exaggerated, it seemed to be advisable to abandon wood for the interior fittings, and especially for the furniture, and to resort to fireproof material, which will not splinter. Many things were tried; furniture was made of steel and aluminium, lined with cork and covered with linoleum or canvas; but it was not equal to wood furniture. Only the bedsteads are constructed of iron, steel, or brass. The insignificant quantity of wood in the few pieces of furniture when ignited is not a dangerous source of smoke, but rather it is the outfit of the state-rooms, the mattresses, blankets, clothing, books, etc. However, for the present, wood cannot be abandoned entirely. Top and signal masts, flag poles, etc., will be made of steel, but there one cannot save weight. The fighting capacity of the ships is without doubt increased through these innovations, since the ship is less apt to burn, the effects of splinters are restricted, and considerable weight is saved, which is available for ordnance and armour."

It may also be mentioned that in German ships-of-war the protective under water-deck is never cut through either for ventilation or coaling purposes.

The old cruising frigate "Leipzig" is being converted into a training-ship for engine-room artificers and stokers. The new coaling stations at each end of the Kaiser Wilhelm Canal are now approaching completion. At Brunsbüttel, the Elbe end of the canal, the coaling station is inside the entrance of the canal on the southern bank of the inner harbour; while at Holtzenau, at the other end, it is just outside the canal. At both stations several ships will be able to coal at the same time. Rapid progress is being made with the repairs to the third-class battle-ships "Baden" at Kiel and "Bayern" at Danzig; both ships are to be ready for their trials on the 1st of March next, and they are then to relieve the "Sachsen" and "Württemberg" in the second division of the first squadron, when the new boiler and repairs of those two ships will be taken in hand.—*Marine Rundschau and Neue Preussische Kreuz Zeitung.*

MILITARY NOTES.

PRINCIPAL PROMOTIONS AND APPOINTMENTS DURING
NOVEMBER.

Field-Marshal the Right Hon. Lord Roberts, V.C., G.C.B., etc., to be Colonel-Commandant, R.A.; Lieut.-General Godfrey Clerk, C.B., to be Lieutenant of the Tower of London; Major-General Sir Baker C. Russell, K.C.B., K.C.M.G., to command the troops in Bengal, with the rank of Lieut.-General; Major-General H. M. Evans, Indian Staff Corps, from the Allahabad District, to command the Rohilkund District, Bengal; Brigadier-General H. G. Waterfield, Indian Staff Corps, from the Malakand District, to command the Allahabad District; Colonel R. Westmacott, D.S.O., Indian Staff Corps, to command a Second Class District, Bombay, with the rank of Brigadier-General; Brigadier-General E. J. Lugard, to command the Southern District, Madras Army; Brigadier-General J. T. Cummins, D.S.O., from the Rangoon District, to command the Madras District; Colonel S. E. Rolland, Indian Staff Corps, to command the Rangoon District, with the rank of Brigadier-General; Colonel J. G. Ponsonby, *p.s.c.*, Royal Berkshire Regiment, to be Military Attaché at Constantinople. Lieut.-Generals Sir W. S. A. Lockhart, K.C.B., K.C.S.I., Indian Army, and H. S. Anderson, C.B., Indian Staff Corps, to be Generals; Major-Generals G. N. Channer, C.B., V.C., Indian Staff Corps, and Sir R. C. Low, G.C.B., Indian Army, to be Lieut.-Generals; and Colonels A. G. Handcock, C.B., Indian Staff Corps, and G. T. Halliday, Indian Army, and Majors and Brevet-Colonels A. Hunter, D.S.O., Royal Lancaster Regiment, and H. M. L. Rundle, C.M.G., D.S.O., Royal Artillery, to be Major-Generals; the two latter for "distinguished service in the field."

HOME.—With reference to some remarks which appeared in the November JOURNAL, pp. 1399-1400, regarding experiments carried out at Dum-Dum, with what was described in India as the "new Lee-Metford bullet invented there," Major-General M. Tweedie, late R.A., writes that he holds a patent, No. 902, of 1891, for this identical bullet, which has been used for some five years in South Africa and elsewhere, with complete satisfaction for sporting purposes, and which has been commented upon by the public press freely during that period. In 1889 he pointed out that the .303 bullet, with its extreme penetration, had not the necessary stopping power to render it an effective bullet against men, or more particularly cavalry charging. In the same year, 1889, he took out a patent, which he still holds, in which it is shown how to produce shock in a small bore compound bullet (Lee-Metford or other) by weakening the front part of the case or mantlet by cutting longitudinal grooves in, or thinning the mantlet or otherwise weakening it at that part to produce expansion, or setting up on impact. In 1891 he took out an improvement in compound bullets by introducing the lead into the mantlet from the front in place of the rear as heretofore, the mantlet being closed and solid at the base, and open in front, leaving the nose more or less uncovered lead. This bullet is called the "Tweedie bullet," and has been in use for sporting purposes for about five years. It has many advantages, giving the necessary shock, never glancing off a hard substance (it will not run off an iron plate at an angle, but, on the contrary, run in); and even in the case of a faulty bullet nothing could be left in the barrel, the base must drive all before it; while it gives most excellent shooting, etc., etc.

In the *Daily Telegraph* of 20th September, 1892, appeared a review of "The Memoirs of Baron Ompteda," and on the strength of a statement in that book the writer of the review questioned the authenticity of the history attached to Napoleon's favourite horse "Marengo," which he is supposed to have ridden in many of his great battles, and finally at Waterloo; and the skeleton of which is now preserved in the Museum of the Royal United Service Institution. The arguments of the *Daily Telegraph* were successfully combated by the writer of an article, entitled "Napoleon's Last Charger," which appeared in the *United Service Magazine* for February, 1893. In this latter the *bona-fide* nature of the horse's history was fairly established, as well as the fact, disputed by the writer of the review in the *Daily Telegraph*, that Napoleon rode more than one horse at Waterloo. In *Baily's Magazine* for November is an interesting paper called "Two Famous War Chargers," by the Hon. F. Lawley, giving an account of the Duke of Wellington's horse "Copenhagen," and of "Traveller," the charger of General Lee, who commanded the army of Northern Virginia. Mr. Lawley takes advantage of this opportunity to repeat his oft-expressed doubts about the story attached to "Marengo." There is a great similarity in the arguments put forward by the writer in the *Daily Telegraph*, in 1892, with those urged by Mr. Lawley, with the exception that the statement as to Napoleon having ridden but one horse at Waterloo, is no longer indulged in. The late General Augerstein, who presented the skeleton of "Marengo" to the Institution, purchased the horse from Lord Petre, who obtained it from a Captain Howard after the flight of Napoleon from the field of Waterloo. The claims put forward in regard to "Marengo's" remarkable history were not then questioned, though known throughout the country. The greatest animal painter of the day, Ward, painted the horse in the lifetime of Napoleon, and within six years of Waterloo. The horse was known to many a good judge, for he was one of the most beautiful specimens of the barb which have ever been seen in this country. He was kept at New Barnes, near Ely, and General Augerstein mated some good thoroughbred mares with him. A filly sprung from them would have been, according to the General's brother, the best three-year-old in England, had she not butted up against "Crucifix," who won the Two Thousand, One Thousand, and Oaks, in 1840. Anyone reading the article in last month's *Baily* should also read the *United Service Magazine* for February, 1893.

In the Museum of the Institution has been for some time exhibited a nailless horse-shoe, patented in England by a company trading as the "Minerva." It is claimed for it that it gives perfect freedom to the hoof, that it can be produced cheaply, and that all pricking is obviated. When once fixed it is supposed to obtain a firmer hold than under the old system. The shoes have been tried in one of the German army corps for over twelve months, and are believed to have been favourably reported upon.

As far as it is possible to judge, without practical experience in its use, the invention has much to recommend it. The shoe is an ordinary horse-shoe fastened on by clips and wedges instead of by nails; it has from four to six rectangular slots, wider at the lower than at the upper surface, and serving to retain the clips and wedges by which the arrangement is made secure. The clips and wedges are of steel, and can be made of any suitable form and strength. The clip has two sharp points, which are bent inwards and downwards, and inserted in the surface of the outer wall of the hoof, thus holding the shoe in its place; the wedges are driven upwards through the slot in the shoe and between the two prongs of the clip, so as to hold the latter tight in the slot. The shoe is easily fixed on and taken off, and, though the clips and wedges may be slightly heavier, the hoof will probably not be as much injured as it would be by the nailing, which gives trouble to brittle feet. As a matter of course, the clip with its two small hooks or points will vary in size according to the class of horse,

the heavy horse requiring larger clips and hooks than the hoof of the lighter horses would bear. To the feet of the horse this system of fixing without nails will be in many ways an advantage.

Considerable discussion has taken place in the Press over the merits of a new helmet which has been issued for trial by the authorities to the 1st Battalion Manchester Regiment at Aldershot, and, it is believed, also to a battery of Horse Artillery and other units. A mistaken notion has got abroad that this helmet is the result of the deliberations of the committee which was appointed by the War Office to discuss the question of a universal head-dress for the Army, but this is not the case. The committee has, so far, come to no conclusion, though the helmet is believed to have come before it. This experimental helmet, which may be seen in the Museum of the Institution, has been fully described in the daily papers. It is universally condemned as unsightly, but it, nevertheless, has something to recommend it from the point of view of serviceability. It is comfortable and it is fairly light, weighing $13\frac{1}{2}$ ozs. in marching order with khaki cover but without the spike and chain, and $14\frac{1}{2}$ ozs. in review order. But it is in no sense remarkably light by comparison with the present home service infantry helmet and rifle busby, the former of which only weighs $14\frac{1}{2}$ ozs., and the latter but 11 ozs. without plume and $12\frac{1}{2}$ ozs. with it. The weight of the other head-dresses worn in the British Army is as follows:—Hussar busby, $29\frac{1}{2}$ ozs.; Lancer cap, $34\frac{1}{2}$ ozs.; bearskin cap, 37 ozs.; heavy Dragoon's helmet, 39 ozs.; and helmet of the Household Cavalry, 55 ozs. The projection at the back of the helmet is a very great improvement on the present home service infantry pattern, in the sense that it is little in the way when firing lying down, because the helmet can be tilted back without the projection coming in contact with the neck. The brim does not appear to give sufficient protection from the early morning sun, say in India; but it is an improvement in many ways on the cloth helmet worn at present by the infantry, engineers, field and garrison artillery, and departmental corps, in comfort and utility, but certainly not in appearance. Its serviceability as a protection from sunstroke would, in all probability, be much increased were the lining orange or ruby colour. Officers who have been quartered in India will have experienced the relief afforded by the use of an orange or ruby coloured lining to the helmet and coat, as was stated in this JOURNAL in November, 1895. The theory of its action is identical with the reasoning which leads photographers to protect their sensitive plates from sunlight by wrapping them in ruby or yellow paper, and developing their plates under a red light. Notwithstanding statements to the contrary, it is considered improbable that the special head-dresses of the Horse Artillery and Hussars, Lancers and Dragoons, Scots Greys, Foot Guards, Highlanders, Fusiliers, and Rifles will, at all events for the present, be superseded by a universal pattern head-dress when serving at home.

The changes in the costume of the British Army, so far as relates to the covering of the head, have been many. The first hat worn after the discontinuance of armour was one in resemblance something between the soft felt hat of the Cape Mounted Rifles and other Colonial Police, and the cocked hat of the Chelsea pensioner. From 1741 to 1768 the three-cornered hat was the universal head-dress of the infantry, except in Fusilier regiments and Grenadier companies which wore the conical stiff cloth Grenadier hat, a pattern of which may be seen in the Museum of the Institution. In 1768, the "cock" of the hat was altered, and the Grenadier cloth hat was superseded by a bearskin hat with black japanned plate in front; Light Infantry companies wore caps of various kinds. In 1792, the cock was again changed, and, in 1798, the hats were increased to colossal proportions. In 1800, the shako was issued to the Guards and all infantry soldiers, even the Grenadier companies wearing them on ordinary occasions; but officers still wore the cocked hat. The shakos subsequently underwent a little alteration, until, in 1809, a new pattern one, copied from those in use in the Austrian Army,

was issued to all ranks. It was made of felt, with a false front, and had a leather peak, and was the hat in which the British Infantry and the Guards fought in the Peninsula and Waterloo campaigns. After Waterloo came the broad-topped shako with high plume, which, in 1831, gave place to a smaller bell-shaped shako and white feather for infantry and green ball tuft for light infantry. This broad-topped shako remained in use until about 1846, when the Albert shako was introduced. In 1857, the latter was altered in shape; and, in 1862, the shako, hitherto of beaver, was replaced by a similar one of cloth, the light infantry wearing green plumes instead of the ball tuft worn by the infantry generally. In 1870, a stiff-crowned shako, as is now worn by the Highland Light Infantry, took the place of the old soft-crowned shako; and, in 1878, was introduced the cloth helmet with spike worn at the present day at home, except in the Fusilier, Rifle, and Highland battalions. The first attempt at a strictly tropical head-dress appears to have been the white cover worn over the shako in India before 1850; then the forage caps with peak with a white-quilted cover and neck guard, such as the infantry wore in India during the Mutiny; these were superseded some years later by the white sun-helmet, which, after undergoing various modifications, has developed into the white helmet which is now undergoing trial in the Army, but which is unlikely to be adopted.

The Report of General H.R.H. the Duke of Connaught, commanding the Aldershot District, on the manœuvres held in the neighbourhood during August and September last, has been sent to the Under-Secretary of State for War. It is, of course, known that the original intention of having extensive manœuvres at some distance from Aldershot was abandoned, when the "Manœuvre Bill" failed to pass through the House of Commons. The operations were, in consequence, reduced to tactical exercises. The total force employed included four regiments of cavalry, nineteen batteries of Royal Artillery, the Telegraph Battalion, two field companies, and balloon section, Royal Engineers, three battalions of Foot Guards, one battalion of Royal Marines, twenty battalions of infantry of the line, one company of mounted infantry, sixteen battalions of infantry Militia, and the usual administrative details.

Of the soundness of His Royal Highness' remarks about the 1-inch maps issued there can be no doubt. For tactical exercises, such as these manœuvres were, instruction to the commanders of battalions, squadrons, and batteries and those under them, can be imparted with much greater facility with 2 or 3 inch scale maps.

The absence of any remarks under the head of organisation is conspicuous; but perhaps it is a pity that the report does not record the fact that there is no organisation in the British Army beyond the regiment of cavalry, battery of artillery, or battalion of infantry. These units appear to have been thrown together in groups, and provided with scratch staffs. Under the head of artillery, the report hints that the system does not work well even at manœuvres.

In regard to the cavalry, the area gave little scope for their acting in a body, but they appear to have performed their limited work satisfactorily; and the Commander-in-Chief was well pleased with their scouting duties. The artillery was well handled, and when employed in masses gave evidence of efficiency and tactical skill; but his Royal Highness reports that some of the batteries wanted instruction in fire tactics and leading, and were unacquainted with Part X. Infantry Drill. It was unfortunate that only five of the batteries were on the higher, or 6-gun, establishment; and that many of the horses were either too young or too old for manœuvre work. The system of mounting the gunners on the off-lead and off-centre horses, as tried in the 56th Field Battery, was alluded to on page 1,398 of the November number of the JOURNAL of the R.U.S. Institution.

The fire discipline and leading of the Regular infantry was eminently satisfactory, and great attention had evidently been paid to company and

battalion training. The health and conduct of the men are reported as excellent.

The Militia units, unfortunately, had no opportunity for preliminary company training, which they much required, and might have had. Nevertheless, they were commended for their work generally, and were favourably spoken of in the daily remarks on the tactical operations. Lord Wolseley considered their fire discipline was creditable to all concerned, which, if true, speaks volumes for the supervision of the officers and permanent staff; the ordinary non-commissioned officers were useless. Attention is very properly drawn to the deficiency of officers in the force, but it is not even hinted that many of those who were present would have been the better for further training. The course of musketry, undergone by the Militia battalions prior to the commencement of the manœuvres, was universally condemned throughout the force as a waste of time and ammunition, on account of the hurried manner in which it was conducted, and the use of black powder. The physique of the battalions, though described in His Royal Highness' Report as only "fair," struck most people as being excellent. The 4th Oxfordshire Light Infantry and some of the metropolitan battalions were young; but the 3rd Northamptonshire and the battalions composing the 4th Division were men of superior physique. If figures convey any meaning whatever, those given in the field state of 11th September, the last day of the manœuvres, would appear to testify to the endurance of the Militia; remembering that the latter were all under canvas, while some of the Regular battalions were in barracks:—

1st Division	...	...	5,283 men.	No. of sick	115
2nd "	...	...	5,270 "	" "	197
3rd "	...	...	6,397 "	" "	254
4th "	(Militia)	...	5,032 "	" "	84
5th "	"	...	5,858 "	" "	90

The behaviour of the Militia is highly spoken of by the General commanding the district and by the Commander-in-Chief; and, according to the returns, this high commendation was well deserved. The number of prisoners returned on the 11th September in each division is as follows:—

1st Division	...	...	...	...	36
2nd "	...	...	...	...	27
3rd "	...	...	...	...	76
4th "	(Militia)	...	...	...	7
5th "	"	...	...	...	16

The marching powers of the Militia would appear to be greater than is made out in the Report. The highest percentage of men falling out in any one day in any Regular division was 24; and in the Militia divisions 57. But all the Regular divisions had two pairs of boots carefully fitted, and had had much previous training in marching, while some of them had the advantage of being quartered in barracks. The Militia had but one pair of boots, indifferently fitted on the first day of training, and were under canvas. The marches varied, but on some days distances of from 18 to 20 miles were covered; and on one occasion a Militia division marched nearly 20 miles, with only 22 men falling out.

The umpire staff—a very important element in the operations—does not appear to have been an unmitigated success. There was no scope for the proper employment of either cyclists or signallers, though both did well so far as the opportunities permitted. The importance of machine guns was, as usual, insufficiently appreciated, and their employment was consequently limited. The inferior physique of the men of the Medical Staff Corps comes in for comment. And, finally, the supply and transport duties were exceedingly well carried out by the Army Service Corps; but that no attempt was made to render more than two divisions out of five mobile, is a confession of the insufficiency of the Transport Service.

There are several important matters in regard to dress and equipment,

alluded to in the Report, which appear to have escaped the notice of the Press. The issue of canvas shoes to the troops was very much appreciated, and they were evidently a great comfort to the men after a hard day's work. The V-girth attachment used by the mounted branches has been pronounced upon favourably; indeed, the almost entire absence of galls since the alterations were carried out speaks well for the change. Seven new patterns of infantry boot were, we are informed, tried during the manoeuvres; and of these, four are reported as being superior to the present ammunition boot. None of these boots are, however, described in the Report, so that it is impossible to say in what respect their superiority exists. In the cavalry a sensible experiment was tried, of substituting ankle boots and leggings for knee boots, and the result is believed to have been satisfactory. Black field boots or shooting boots and putties for mounted officers of infantry are now being tried during the route marching season; perhaps the ankle boot and legging, which has proved successful in the cavalry, may be also tried. Paragraph 3 of the District Orders of 8th August (Appendix A) laid down a hard-and-fast rule, which was open to objection—namely, that leggings were to be worn by dismounted troops in all orders of dress. Fortunately for the order, wet weather almost entirely prevailed: many medical men and other authorities condemn the legging as unnecessary and unhealthy in hot and dusty weather.

The statements recently made in public by responsible authorities point to an early increase in the strength of the Army and Marines. There are fair grounds for hope that the War Office has at length succeeded in impressing on the Government the absolute necessity of restoring the balance between the number of infantry battalions serving at home and the number abroad. As has been pointed out over and over again, until this balance has been established the whole double battalion system is vitiated and its satisfactory working rendered impossible.

It may be remarked that this much-desired balance may be arrived at in two ways: first, by raising additional infantry battalions, and secondly by a re-adjustment of foreign garrisons. An impression prevails that the expected increase is more likely to be effected in the Brigade of Guards, in the Artillery, and in the Marines, than in the Line.

The "linking system" has never been carried out as originally proposed, viz., that one battalion should be at home feeding the battalion abroad; and it is further now than ever from a satisfactory system of working. Lord Lansdowne states that there are eleven battalions abroad without their corresponding battalions in these islands. Although strictly correct, on examination it will be found that matters are not quite so bad. Five territorial two-battalion regiments have both battalions abroad, and the single one-battalion regiment in our Army—the Cameron Highlanders—is also abroad. These make up the eleven battalions of which his lordship spoke. One of these battalions is now on its way home, and, as the Cameron Highlanders have no corresponding or linked battalion at all, it follows that, to be precisely and absolutely accurate, there are four two-battalion regiments having both battalions abroad. In other words, if four battalions, or five, counting the Cameron Highlanders, were brought home, the system of linking would be workable at the present moment, notwithstanding the drains for Egypt and the Cape. In short, we have four or five more battalions abroad than we ought to have for the efficient working of the system. An increase in the Marines would add to the *personnel* of the fleet and at the same time, if the garrisoning of certain stations abroad were intrusted to them, release a certain number of line battalions from island and isolated stations where in a purely military sense their utility is doubtful. Bermuda, Hong-Kong, Singapore, Mauritius, St. Helena, and others may be quoted in this connection. In nearly all of these places a line battalion is stationed, and were the suggestion, made in the *Times* of the 7th inst., that Marines be detailed to supply the garrisons, be acted upon, a sufficient number of infantry battalions would be freed to work the

linking system properly. Were the above stations turned over to the Admiralty, to be garrisoned entirely by the Marines—infantry and artillery—under Marine command, the system of dual control by two departments—Admiralty and War Office—of the sea and land defences of these places would be abolished, and that of itself would add to the efficiency of the combined defence. A decided economy would be brought about by natural process with an increase of efficiency, for, in the stations above named having garrisons of a battalion and a couple of companies of artillery and engineers, the staff for such a small force is always a large and expensive one under the Army system, with its separate sets of officials for artillery and engineers and other small units. At Bermuda, for example, ten staff officers, nearly all of the rank of lieutenant-colonel, are maintained for the control of a force less numerous than a single German regiment—and this, of course, not counting regimental officers. With a marine garrison all that multiplication of highly-paid officials would be done away with under a homogeneous organisation.

Should third battalions be added, as is possible, to the Coldstream and Scots Guards, no doubt two or even three Guards-battalions would form part of the Mediterranean or other foreign garrisons, and in conjunction with additional Marine battalions, restore the balance of home and foreign battalions in the line.

The advantage to the Army of either of these courses would be very great, and such an increase too, and localisation of, the Marines, as has been suggested, would be alike advantageous to the Navy, which would thereby be endowed with an invaluable and much-needed reserve, most conveniently posted, from which might be replaced, in part at least, the heavy casualties to be anticipated in the naval warfare of the future.

AUSTRIA-HUNGARY.—The steps by which the Honved Army, or Hungarian Landwehr, reached its present organisation, were commenced on the morrow of Sadowa—for in Austria, as in France, defeat was the forerunner of reform. In 1869 the Honved Infantry consisted of 82 battalions, including reserves and 48,900 young soldiers. In 1870 these battalions were formed into brigades, and took part in the Autumn Manœuvres. In 1872 the number of battalions was raised to 86, and in 1873 it was still further increased to 92. These were in the following year divided into 14 brigades of 6 or 7 battalions each, and provided with a permanent staff. The permanent establishment of half-brigades was authorised in 1886; in 1889 the strength of the cadres was quadrupled, and the number of battalions was increased to 94. The half-brigades were, in 1890, termed regiments.

On mobilisation, the strength of the Honved Infantry would be 105 Landwehr battalions, 94 Landsturm, 102 Territorial; or in all, 301 battalions, the cavalry would reach a total of 90 squadrons. There are no Honved Artillery, the Hungarian recruits for that arm being drawn for general artillery service.—*Revue du Cercle Militaire*.

Several novelties were tried at the late manœuvres in Galicia. For example, telephonic sections attached to army corps; preserved vegetable soup, 1 kilogramme of which furnished from 350 to 400 rations; various models of filters, the employment of citric acid for the purification of water; and the better supply of ammunition by means of divisional parks carrying 20 rounds per rifle.—*Revue du Cercle Militaire*.

A surprise mobilisation took place at Pilsen during the autumn, as an experiment. The object was to test the rapidity and efficiency with which the transport arrangements could be made by the train for the service of the 35th Regiment of Infantry. Everything was completely done in four days, the transport wagons and company ammunition carts being loaded, horsed and turned out ready for active service. The troops marched out and had dinner prepared in field kitchens.—*Militär-Wochenblatt*.

BELGIUM.—It is intended to open a school for cadets in Belgium in October, 1897. The school will be situated at Namur. All candidates for admission must be sons of officers, preparing for entering the Army, either as combatant, medical, or veterinary officers, and must be between the ages of eleven and sixteen.—*Revue du Cercle Militaire.*

BULGARIA.—Manœuvres on a considerable scale were held this year in Bulgaria. The infantry battalions were brought up to a strength of 750 men, by calling in certain classes of reserves, but the cavalry and artillery were allowed to remain on a peace footing. The general idea was that the West (a hostile) army had invaded the country before the defenders had completed their mobilisation, and was besieging the capital. Its duty was also to prevent the union of the Bulgarian contingents. The task of the East army was to cover and complete its mobilisation. The Western force consisted of 19 battalions, 8 squadrons, 1 squadron of gendarmes, 9 field batteries, 4 mountain batteries, 1 section of cyclists, and 1 section of signallers. On the Eastern side were 20 battalions, 10 squadrons, 1 squadron of gendarmes, 11 field batteries, 2 mountain batteries, 1 battalion of pioneers, 1 section of cyclists, and 1 section of signallers. The whole strength of the troops amounted to 37,000.—*Militär-Wochenblatt.*

FRANCE.—The Cyclist Company, under Captain Gerard, triumphed over all difficulties during the manœuvres of the 2nd Army Corps, and conclusively established the military value of the cycle. The cavalry, who originally looked down on the wheelmen, are now their best friends, it being found that these two branches are the complement of each other. For keeping up high speed for a long distance on a road the cyclist is the soldier to be selected, but for crossing country the horseman has the advantage. The cyclists are a kind of mounted infantry, partaking of the nature both of infantry and cavalry. It is probable that, in consequence of the experience gained at these manœuvres, a cyclist company will be attached to each independent division of cavalry, and one to each army corps; but the companies must be trained in time of peace. It will also be necessary to decide on the best kind of cycle, and it appears that the folding pattern invented by Captain Gerard more nearly approaches the ideal than any other, although some improvement may be yet made upon it.—*Revue du Cercle Militaire.*

The proportion of three years' volunteers for each regiment of infantry, Zouaves, Algerian tirailleurs, artillery, engineers, and some other corps, is fixed at ten for the period between 1st October and 31st December, 1896.—*Militär-Zeitung.*

The *Revue du Génie* gives the following account of the rapid construction of the special railway to the camps of Châlons on the occasion of the visit of the Czar and Czarina to the Grand Review on 9th October.

The line ran from the railway station at Mourmelon to the tribunes erected at the saluting point, and was constructed by the 5th Regiment of Engineers between the 4th and 8th October.

It was only on the 2nd October that it was decided to make this railway. The same day Colonel Lefort informed the station-master at Versailles (the headquarters of the Engineers), that orders would be sent to him to prepare a train for the transport to Mourmelon on the morrow of 35 officers, 950 men, 30 horses, and 7 wagons of matériel, and requested him to send the 7 wagons the same evening to the polygone of the regiment.

The officers were only warned at 8.30 p.m. A captain and 3 lieutenants were told off to make a preliminary survey of the line, and these 3 officers left Paris by the midnight train, arriving at Mourmelon at 6 a.m. on the 3rd. A detachment of 50 men left Paris by the morning train to assist in this work.

At 9 p.m., on the 2nd, the regiment was dressed in working dress, and getting ready the provisions for the route. Working parties were employed during the night loading the 7 wagons with tools, implements, etc., and a Wells lighting

apparatus. This work was completed between 3 and 4 a.m., and at 7 a.m. on the 3rd the regiment entrained under the command of the lieutenant-colonel; the colonel, with the engineer of the Eastern Railway, having left previously by an express train. The 3 officers who had left the evening before had completed the preliminary survey by the morning. At 8.25 p.m., on the 3rd, the military train arrived at Mourmelon, and the 10 companies were at once billeted in the town.

On the 4th, notwithstanding the fatigues of the previous day and night, work commenced at 6 a.m. with making the junction at the station at Mourmelon, and by noon the first rails were laid. The weather kept fine, but rain threatened, and to hasten the work the colonel sent for the five territorial companies of the regiment of 250 men, then assembled at Versailles. The work proceeded with feverish haste, and at 5.30 p.m. 300 metres of rails had been laid, and a telegram was despatched to the Minister of War that 400 metres would be finished during the night, which promise was kept, notwithstanding that at 9 p.m. it came on to blow hard with sheets of rain, which much interfered with the working of the Wells lighting apparatus; the rain also made the work in the chalky soil much more difficult, and trenches and pits had to be dug to get rid of the water. However, by noon on the 5th, 1,400 metres of rails had to be laid; and at 5.30 p.m. 1,900 metres, the Minister of War being informed that 2,300 metres would be laid by 11 p.m.

To further accelerate the work, the 20th Company was now sent to Mourmelon from Cherbourg, where it had been employed. The five territorial companies on arrival were employed preparing the station for the arrival of the troops coming for the review.

On the 6th, at 10.30 p.m., 2,850 metres had been laid, and the ballasting was completed for 600 metres, notwithstanding the incessant arrival of the military trains at Mourmelon.

On the morrow (7th Oct.), by 9.15, the rails were laid for 4,370 metres, and ballasted for 2 kilometres; and at 4.5 p.m. the last rails were laid. The disembarkation platforms, 1,100 metres long, were then commenced.

On the 8th, the ballasting was finished for the whole distance, and the stations were decorated. A captain was told off as superintendent, and lieutenants were appointed station-masters at the two stations.

The following is a *résumé* of the work executed in five days:—The laying of 5,700 metres of rails and two complete apparatus for junctions and points; construction of four level crossings, with planked ways 18 metres long; ballasting of the road, with 1,000 cubic metres of ballast, sent from Troyes; erection and filling of tanks of water at the terminus for the locomotives; putting up of buffers at the station; organisation of a telephone line of 6 kilometres, with three despatch stations; decoration of the two stations.

The following is a *précis* of an interesting article in the *Revue des deux Mondes* of the 15th September, entitled "*Le Service Militaire de 15 mois et les rengagés*," by M. le Cdt. G. de L.

At present the term of military service in France is three years, and the writer of this article gives several apparently well-considered objections to this period, and advocates its reduction to fifteen months.

The article commences with a short sketch of the methods of recruiting their armies employed by the chief European Powers, of which the following is a *résumé*.

GREAT BRITAIN

alone, he says, remains faithful to her former and rather out-of-date traditions. The method of recruiting the various branches of her Army, Regulars, Reserve, Militia, Yeomanry, and Volunteers, are accurately given, but the numbers are not quite correct. The total number of all branches of the British Army is stated to be 661,449, whereas the number this year, exclusive of the Indian Army (150,063 men), should be 718,821 men; and with the Indian Army, 868,884 men.

RUSSIA.

The number enrolled is stated to be 4,677,000 trained, and 4,000,000 untrained men, the large number of the latter being due to the fact that of the annual levy of 491,785 men liable to military service, only 262,000 are incorporated in the army. The remainder however still remain liable for service, and thus the number which Russia can rely upon in time of war reaches the enormous total of 8,677,000 men.

AUSTRIA.

Obligatory personal military service was introduced in 1886, modified by the laws of 1889 and 1893.

The length of service is twenty-one years, the age being from twenty-one to forty-two, passing from the active army to the Landwehr and thence to the Landsturm. The annual contingent of recruits is 150,000 men, and the army when mobilised numbers 2,076,000 trained and 442,000 untrained men.

ITALY.

The law of March 8th, 1888, prescribes universal and personal military service between the ages of twenty and thirty-nine.

The army when mobilised numbers 1,473,000 trained and 727,000 untrained men.

GERMANY.

By the law of 11th February, 1888, universal personal military service of three years with the colours was ordained, this was reduced to two years' service by the law of 3rd August, 1893, except for men serving in the cavalry and horse artillery.

The increase in the population of the Empire has not in recent years permitted of the whole of the annual levy being trained, the yearly number incorporated in the army under the three years' act being only 178,000 out of 470,000 men, giving an army of 3,228,000 trained and 3,576,000 untrained men. By reducing the term of service to two years, it has become possible to raise the number incorporated annually from 178,000 to 229,000 without increasing the estimates, and thus the number of trained men has been increased and now stands at 4,300,000 men.

FRANCE.

By the law of 15th July, 1889, universal military service for twenty-five years from the age of twenty-one was enacted, divided as follows:—

Active army	...	...	...	3 years
Reserve of active army	...	...	10	"
Territorial army	...	...	6	"
Reserve of Territorial army	...	...	6	"

—
25

giving an army of 4,300,000 trained and 400,000 untrained men.

By grouping the Powers apparently in their respective alliances, the writer obtains the following table:—

Powers.	Trained Men.	Untrained Men.	Totals.
Italy	1,473,000	727,000	2,200,000
Austria	2,076,000	442,000	2,518,000
Germany	4,300,000	2,900,000	7,200,000
Total	7,849,000	4,069,000	11,918,000
Russia	4,677,000	4,000,000	8,677,000
France	4,300,000	400,000	4,700,000
Total	8,977,000	4,400,000	13,377,000
Grand Total	16,826,000	8,469,000	25,295,000

In the second part of his article the writer proceeds to discuss the question whether these enormous masses of men are sufficiently *encadrées* to permit in time of war of being moved, directed, and finally brought into action.

He gives several instances from history showing the benefit derived from mixing a certain number of old soldiers with young troops, and observes that these examples show "that the old soldier, the professional who has engraven in him the sentiment of military devotion, and who, due to his age, has the necessary morale and *sang-froid* to go blindly forward to meet any danger, encourages by his example the young and inexperienced men around him, and transforms them into efficient combatants."

The Germans, he goes on to say, have seen and understood this, and to remedy the defect and stiffen their young troops have created a body of 70,000 long-service re-engaged men, whereas in France the number of *sous-officiers* re-engaged is only 23,688, and in Russia but 14,000.

But besides this, the writer continues, the young men of twenty to twenty-three years of age, who are serving in time of peace, are not matured physically any more than they are morally, and are quite unfit to undergo the fatigues of a campaign. As a proof of this he cites a statement made by the French War Minister to the Chamber regarding the recent Madagascar Expedition:—

"17,500 men (said the Minister) went to Madagascar, of these 3,000 died, and 6,000 were sent home, the remainder are at Antananarivo and on the road to Majunga. The corps which suffered most were the 110th Battalion of Chasseurs and the 200th Regiment. The conclusion of all this is that only matured men should be sent to these regions."

General du Barail, a former Minister of War, also wrote recently as follows:—

"The opinion now is that specially-seasoned troops, men of from twenty-five to thirty years of age should be reserved for service in the Colonies. If this is necessary for the Colonies, how much more so for the national army which has to defend our territory at home! I shall be told that the reserves are there to furnish these men; no, the reserves do not suffice for the purpose. It is necessary that there should be in each company, squadron, or battery, some real *soldats d'élite*, that is to say, soldiers by profession or vocation."

The objections to short service from a social point of view are also given in the following extract from a remarkable speech recently delivered by Monsieur le député Jules Delafosse:—

"I consider obligatory military service, such as we have conceived and practised, the most pernicious agent of social demoralisation and national dissolution that exists in the world. I have the well-considered conviction that if we permit it to continue for twenty years longer the ravages it has already commenced, there will then be no longer either society or army, there will only be a disintegrated mass of people without bond of union, without discipline, and without cohesion. Military service as at present constituted dishabituates thousands of young men from the centre where they have grown up, the careers they have commenced, and the simple and upright lives which they ought to follow, and when after three years of this alienation it gives them back to civil life they turn to it no longer.

"Many of them have become accustomed to the life of towns, and many wish to remain in the cities, and do remain, becoming workmen without work, needy without employment, discontented and unclassed, and it is thus that the towns are filling and the country becoming depopulated. This destruction of equilibrium appears to me a great danger of the present day, and I do not hesitate to say that I consider obligatory military service as one of the most powerful agents for recruiting the ranks of revolutionary socialism."

The two years' system adopted by Germany is said to be inapplicable in France because the resources of the French annual contingent of recruits are

insufficient; the time is, however, suitable for some change, because public opinion in France has been awakened to the growing evils of the present system.

The writer asks what are the essential conditions of a good recruiting law, and says the aim should be, in the first place, to create an army in time of peace sufficiently disciplined and matured to serve in war-time as the cadres for a properly trained reserve, and, in the second place to reduce to a minimum the charges on the country.

The active army cannot be considered efficient unless it is composed largely of old soldiers, re-engaged men; but as many men as are required would come forward to re-engage if they were given some advantages in pay and provided later in life with a pension to assure them a comfortable future when their military career was ended.

If, however, this were obtained, the question arises, Would a short service of fifteen months be sufficient instruction for the great mass of the army? If the recruit during his service is in permanent contact with carefully selected old soldiers, the answer must be Yes; and that it is possible for a class of recruits drafted for a year and some months into a corps composed of veterans to acquire all the military instruction necessary, and that by such contact these young men would certainly acquire greater military spirit than they possess to-day.

The writer then proceeds to state his scheme of fifteen months' military service, observing that only a very condensed summary of his chief proposals is given here.

The actual army in peace-time voted by the French Chambers numbers 544,179 men, of which 25,000 form the permanent effective, and the remainder are engaged for short service. By the proposed method of recruiting the same number of men would be voted, but disposed as follows:—

Old soldiers	...	...	...	296,179
Fifteen months' men	...	...	...	248,000
Total	...	...	...	544,179

The peace establishment would then consist of nearly three veterans to every two recruits, and the proportion of veterans would still further increase in time.

The 250,000 old soldiers should be divided as follows:—

Men engaged for 6 years	...	...	150,000
" " 8 "	...	...	70,000
" " 10 "	...	...	30,000
24			250,000

The second and third categories would be recruited from men who have terminated their six years' engagement. The ten years' men, after completing their last engagement, would become entitled to a pension at the age of forty-five.

It is estimated that four years after the introduction of the new scheme an army of 150,000 veterans would be obtained, and the full number of 250,000 men in ten years. During this time the period of compulsory service would be gradually reduced for the remainder of the army from three years to fifteen months by drawing lots.

The bounties, which it is thought would be sufficient to attract the necessary number of re-engaged men, are given as follows:—

For engagements of six years	...	...	1,000 francs.
" " " eight "	...	...	1,000 "
" " " ten "	...	...	1,200 "

The yearly rate of pay would have to be increased gradually, as follows:—

Fourth to sixth year	...	...	300 francs.
Seventh to fifteenth year	...	...	500 "
Sixteenth to twenty-fifth year	...	...	600 "

After twenty-five years' service a pension of 400 francs would be given.

Possibly, the improved pay alone, without any bounty, might suffice to attract the requisite number of re-engagements.

The annual cost of these increased charges is estimated to be as follows :—

Bounties for re-engagements ...	37,350,000 francs.
Increased pay	75,500,000 „
Pensions	24,443,000 „
Total charges	137,293,000 „
or in round numbers	138,000,000 „

It is proposed that this sum should be raised by levying a military tax on the contingent of recruits who are called up each year, and who would obtain a *quid pro quo* by the reduction of their term of service from three years to fifteen months. Allowing that the yearly contingent of recruits numbers 335,000 men, the following result is obtained :—

$$\frac{138,000,000}{335,000} = 411 \text{ francs,}$$

the sum to be paid by each man when called up ; or spreading this payment over the twenty-four years of military service which everyone owes to the State, a yearly sum of 17 francs 12 centimes.

It would, however, be quite equitable that this tax should not be uniform, but calculated *pro rata* for each man according to his income and position in society, in which case the full amount of 411 francs would fall to 50, 100, or 200 francs for workmen or artisans—a sum which it is thought they would gladly pay either in full or by instalments to escape the full term of three years' service.

One further objection, and not the least important, is urged against the three years' system.

At present, when the yearly contingent of time-expired men is discharged, the effective of the different regimental units is diminished by one-half, and this can only be remedied after some months of instruction to the recruits of the newly called-up class ; it follows, therefore, that after the departure of one class (at the end of September), and the time when the newly called-up class can be utilised (beginning of March), that is to say, for five months, the French Army is in a most critical condition—a matter to which sufficient attention has not been paid.

From the time of year chosen for effecting these changes it seems to be taken for granted that war will only be declared in the spring or summer ; but, on the contrary, it is almost certain that an enemy would endeavour to profit by the crisis through which the French Army passes from the above causes in the winter months.

By the proposed substitution of fifteen months for three years' service, the recruits of the new class being called out annually three months before the time of the class serving has expired, the former would, it is evident, have three months' service at the time of the discharge of the latter.

This, it is true, would entail a still further increase in the estimates of about 25,000,000 francs, but it is thought that some reduction may safely be made in the establishment of the military train, the number of which corps by comparison with that of the German Army seems excessive, and that by this means this extra expense might be met.

Finally, with a view to increasing the efficiency of the Colonial Army, the writer of the article thinks that if his plan were adopted the troops for defence of the Colonies should be placed under the orders of the War Department and attached to the *corps d'armée* of the maritime provinces, from which a sufficient number of veteran soldiers could be drawn in case of any colonial expedition to raise them to a war footing.

GREECE.—The King has addressed a Rescript to the Prime Minister indicating the necessity for the adoption of military manœuvres on a larger scale than hitherto attempted, the formation of a permanent camp, the withdrawal of the troops from police and other duties in towns, the summoning of 10,000 or 12,000 men from the Reserve, and the completion of the equipment of the cavalry. The King further considers it necessary that a modern rifle should be provided for the army, and that a committee of officers should be entrusted with the selection of a new weapon. These indications of activity and a more progressive policy in regard to military affairs, have naturally been received with great satisfaction in the army, the officers of which generally consider that the army is inadequate for the services required of it, and that it has been neglected. The ideas of discipline which prevail amongst the officers in the army of Greece have been somewhat freely criticised of late.

The military system in Greece is one of universal liability on all able-bodied males, aged twenty-one years and upwards. The total service is for nineteen years, of which two years (with considerable terms of leave) must be passed with the colours, eight and seven years in the reserve, and the remainder in the Militia or Landwehr. The nominal strength of the army in 1895 was:—Artillery, 2,287 officers and men; cavalry, 1,146; engineers, 1,213; infantry, 16,039; War Office, 240; general services, 501; military schools, 222; and gendarmerie, 3,229. There were at the same time 3,739 horses and mules, and 120 guns. By the terms of a law passed by the Boulé in the session of 1887, the numerical strength of the army on the peace footing was fixed at 24,076 men, comprising 16,136 infantry, 4,877 cavalry, and 3,063 artillerymen and engineers. On the war footing the strength could be mobilised to 100,000 men. The reserve forces alone give a total of 104,500 men, and behind these is what is called the territorial army, numbering 146,000 men.

ITALY.—In the Central School of Gunnery at Nettuno, during the winter of 1896-7, there will be two courses of instruction for the Field Artillery. The first occupies from 19th November to 22nd December, and the next from 3rd January to 6th February. Forty officers are selected by the Inspector of Field Artillery to undergo each course. First of all, the commanders of batteries who have not already passed through a similar course are ordered to attend, and then the oldest lieutenants. The commandant of the school is Colonel Carrano, of the 14th Artillery Regiment, assisted by two majors as instructors, and a staff.

RUSSIA.—Winter marches are to take place as in previous years. Orders have been issued in the Warsaw district that all available troops and horses must take part in them, and all officers must be present. Every corps must perform at least two marches a month, under a tactical idea, and the operations are to conclude with a battle or an attack on a marked enemy. The marches will be carried out in all weathers, and will be gradually increased till they extend to 30 versts; the men will be in heavy marching order. Independently of the above, each corps must bivouac for one night, but for this the temperature is not to be lower than 10° Réaumur. If during the night it falls to 12°, the troops will be roused and do a night manœuvre. The three arms are to be present, if possible, at all winter manœuvres.—*Revue du Cercle Militaire*.

In Turkestan, 14 of the 20 line battalions have been formed into 3 independent brigades. The commanders have the rank and staff of generals of division. The remaining battalions form the reserve cadres, with an increase of strength. An independent brigade of Turkestan Cossacks has also been formed, under the command of an officer with the rank and staff of a general of division. These troops are under the direct command of the general officer commanding the district.—*Militär-Wochenblatt*.

Hitherto the railway battalions have consisted of 4 companies in war and 5 in

peace. The active battalions in war and peace have been composed of 2 companies for the duties of traffic, and 2 for those of construction. The 5th or peace company acted as the nucleus of a reserve battalion to consist of 3 companies for traffic and 1 for construction. This arrangement is now altered. There will, henceforth, be no difference between traffic and construction companies, the necessary materials for both duties being equally distributed among the companies. The cadre company is now 101 strong; the 4 other companies are 123. The full war strength of a company, including under-officers and buglers, is 260.—*Militär-Wochenblatt*.

An intelligence branch has been organised in the Russian cavalry on the same principle as that for the infantry. Under-officers and soldiers who have special aptitude for the duty are to be put through a course of training. Sixteen of the best men in each squadron are to be detailed, and to be supplied with their best horses, and those who pass satisfactorily through the course will be distinguished by a cord attached to the shoulder strap. The training in each squadron is entrusted to special officers and particularly those who are fond of field sports, and the regimental instruction is superintended by a staff officer. The 30 men who prove themselves to be the best of their year, will, in autumn, receive a decoration in addition to the above-mentioned distinction.—*Militär-Wochenblatt*.

SPAIN.—There are now in Spain 128,865 men with the colours. In Cuba there are, in round numbers, 200,000 Spanish troops of all arms, exclusive of native volunteers. In the Philippines there are 30,881, and in Porto Rico 600. The total comes to over 360,000 men under arms; while in time of peace the whole strength of the kingdom, including Civil Guards, Carbineers, and Colonial volunteers, never exceeds 140,000.—*Militär-Wochenblatt*.

SWEDEN.—Since 1892 the duration of army service has been doubled. In the cavalry and artillery men must serve 90 days continuously; and in the other arms 68 days in the first year and 22 in the second. Liability to service lasts for 20 years, the first 8 being in the first ban, the next 4 in the second, and the last 8 in the yet unorganised Landsturm. The standing army consists of officers, non-commissioned officers, and volunteers. On a peace footing the army, including the troops in the Island of Gothland, consists of 1,905 officers, 36,000 men, and 6,742 horses, but on mobilisation it can be brought up to a strength of over 100,000 men.—*Deutsche Heeres-Zeitung*.

NAVAL AND MILITARY CALENDAR.

NOVEMBER, 1896.

- 3rd (T). Despatches, in connection with Dongola Expedition, published by the War Office.
- 4th (W). Bechuanaland Railway extended to 162 miles beyond Mafeking.
- " " 2nd Field Battery, R.A., and 2nd Dragoon Guards (Queen's Bays) arrived in England, from India, in the transport " Britannia."
- 5th (Th). Martial law proclaimed in Mozambique, Portuguese East Africa.
- 7th (S). First-class battle-ship "Anson" and torpedo-depôt-ship "Vulcan" re-commissioned at Malta.
- " " Reinforcements left Spain for the Philippines under the new Governor, General Polavieja.
- 9th (M). 33rd Company, Southern Division, R.A., left England for Rawal Pindi in the transport " Britannia."
- " " General Brassine, Belgian Minister of War, resigned on his colleagues refusing to agree to his scheme of military reform.
- " " General Weyler assumed command of the Spanish forces concentrated about the Trocha de Mariel, Cuba.
- 10th (T). Rebels defeated at Novaletta, in the Philippines, by Spanish troops.
- 13th (F). Egyptian railway completed to 20 miles beyond Kosheh.
- " " 1st Battalion Worcestershire Regiment arrived at Plymouth from Aden in the transport " Britannia."
- " " 57th and 80th Field Batteries, R.A., arrived at Bombay in the transport " Dunera."
- 16th (M). Dervish incursion near Tokar.
- " " Ratification of treaty of peace between Italy and Abyssinia.
- 19th (Th). Third-class cruiser "Magicienne" paid off at Devonport.
- 20th (F). 39th and 68th Field Batteries, R.A., left Bombay in the transport " Dunera" for Woolwich.
- " " Contingent of Royal Marine Artillery, from the Soudan, arrived at Portsmouth.
- " " News received of successful attack on the stronghold of Yao Chief Katura, north-east of Mangola, British Central Africa.
- 22nd (Sn). Colonel Paget returned to Gwelo, having dispersed rebels and burned the kraals in Thabi Insimbi hills.
- 24th (Tu). Russian force landed at Seoul, in Corea, for protection of the Legation.
- 25th (W). First-class battle-ship "Royal Oak" paid off at Portsmouth.
- " " Autograph letters and despatches of the Duke of Wellington and Lord Hill sold to the British Museum for 600 guineas.
- 26th (Th). First-class battle-ship "Prince George" commissioned at Portsmouth.
- 27th (F). 8th Field Battery, R.A., and 2nd Battalion The Royal Scots Fusiliers arrived in England, from India, in the transport " Dilwara."
- " " Rebellion in Mashonaland ended.

FOREIGN PERIODICALS.

NAVAL.

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AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens*. No. 12. Pola and Vienna: December, 1896.—“On the Ventilation of Ships.” “Tactical Problems of Naval War.” “The Defence of the Sea-Front of the Harbour of Spezia.” “The New Tariff for the Kaiser Wilhelm Canal.”

DENMARK.—*Tidskrift for Søvesen*. No. 5. 1896. Copenhagen.—“Some Remarks on the Battles of Lissa and the Yalu.”

FRANCE.—*Revue Maritime*. Paris: October, 1896.—“Determination of the Meridian by means of the Hour of the Watch.” “Help of the Victims of Naval War.” “A Practical Guide for Courts-Martial” (*continued*). “A Classification of Water-Tube Boilers” (*concluded*). “The English Naval Manœuvres of 1896.” “Attack and Defence.” “Official Reports on the Obry Torpedo-Apparatus.”

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ITALY.—*Rivista Marittima*. Rome: November, 1896.—“On the Interpretation of the Launching Curves of Ships.” “On the Order of Naval Studies and

the Maritime Career." "Water-tight Rivetting." "On the Italian Coasts of Somalia" (*concluded*). "The Unholy Alliance" (*concluded*). "The Maritime Agreement between Italy and France." Letters to the Director:—"Submarine Telegraph Cables in War"; "The Unholy Alliance." "Naval Notes." "Notices of Books," etc.

L'Osservatore Navale. Palermo: September-October, 1896.—Has not been received up to time of going to press.

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NOTICES OF BOOKS.

Bonaparte et Hoche en 1797. Par ALBERT SOREL, de l'Académie Française.
Paris: E. Plon Nourrit et Cie., 1896. Price 3.50 frs.

That a volume of Napoleonic history by M. Sorel, who is probably the greatest living authority on that period, is unimpeachable so far as facts and deductions from facts are concerned, goes without saying. It would, indeed, be presumption on the part of a humble individual, like the present writer, to question a single statement made, or a solitary opinion advanced, by the man who is master of his gigantic subject, of whose industry and genius a long list of works—several of which have been “crowned” by the Académie—gives evidence. But the book now under notice is more than good history: it is a literary masterpiece. Under both heads, as history and as literature, it merits consideration.

With some show of justice it may, of course, be argued that another volume on Napoleon is superfluous. The three great literatures of the world—English, French, and German—have given us a surfeit of Napoleon; surely, one may well ask, the last word has been said anent both man and time? The answer is that there are volumes and volumes. Of subordinate memoirs, of irresponsible disquisitions, of works written by men who have nothing to say, or who—if they have aught—say it so badly that they are not worth listening to; of cumbersome, many-volumed general histories, accumulating that which others have disclosed or discovered, as well as of summaries for given purposes, dishing up the cream of other men's infinite labours, we have had enough and to spare. But works which, like the present, are the result of arduous toil, of research, study, and high thinking, and which, for these reasons, radiate fresh light, ought to be welcome whatever their topics. For such works are the units, the aggregate of which constitutes a nation's literature, that is, the uttered thoughts of the national brain.

The pith of the matter is that M. Sorel has a great deal to say—much of which is novel, all of which is interesting—and says it invariably well. The vastness of the subject engenders a refreshing absence of verbosity, all is terse and to the point, while the judicious selection of material keeps the volume within the appointed frame and creates in the reader a pleasurable sense of completeness and unity.

M. Sorel's work is, as the title implies, divided into two sections: the first, “De Leoben à Campo Formio,” dealing with Napoleon; the second, “Les vues de Hoche,” with the latter. In both instances the author has confined himself to the period which his title-page indicates, the year 1797. The first part ends with the consummation of that most treacherous and fatal of all treaties, Campo Formio; the second terminates in the premature and tragic death of Hoche. Were it not for the fact that the author implies, rather than draws, a parallel between his two heroes and gives an intelligent reader ample material and the obvious impulse to follow the parallel farther in his own mind, the connection between the two parts would be somewhat loose; but, as it is, the work forms an undividable whole, the primary condition of literature in its proper sense. The second essential is fulfilled in even a more striking manner: for the book is written with perfect mastership of style and language, always brilliant and forcible, often fascinating and even poetical. This constitutes its greatest charm. There is not a single sentence that the most critical reader might wish to remodel; and so finely balanced is it in its component parts, that not a paragraph could be added or abstracted without detriment to the whole.

If any possible fault could be found under this head it lies in the present tense employed throughout the narrative. However vivid this style of writing may be for single passages, it loses something of its force when continued over a volume of 335 pages. However, it is essentially French, though not necessary because French; and as it does not spoil, even if it does not enhance, it would be ungenerous to grumble.

The author has been at pains to mention the writers whom he has consulted, whose works embrace the Napoleonic literature of the three languages named above. Such is his scrupulousness that he is careful to inform us in a footnote that he has drawn upon certain English books in their French translations, whilst he appears to have perused the German volumes in their originals.

That, granted the two factors mentioned above, viz., mastership of both facts and form, the author gives us strikingly clear, vivid, and beautiful pictures of the persons to whom he introduces us, is in the nature of things. His portrait of Bonaparte at the time of his Italian glories is full of fascination to all such as either love or detest that grand personality. For our author writes without bias, and there is not a sentence in his work that could be construed into a token of prejudice, whether he deals with men (his portrait gallery embraces all the prominent Frenchmen, good or bad, of that period, and many foreigners) or with peoples (those of France, Italy, Austria, Prussia, the rest of the German Empire, England, Ireland). Hoche he presents to us in an entirely new and wholly admirable light. One cannot help feeling that as a novelist M. Sorel would have been to his nation a second Balzac.

Let us examine briefly M. Sorel's narrative chapter by chapter. He commences "De Leoben à Campo Formio" with the "Préliminaires de paix," and already on the third page we come across the keynote of the situation: "Le Directoire commençait à tout craindre de ce jeune homme dont il s'était obligé à tout espérer." Bonaparte was the one man on whom rested the hopes of the faction-torn nation, and the Directorate, whilst constantly employing him in the greatest problems that beset it and in the most secret and difficult tasks that it encountered, whilst lauding him to the skies and holding him up to universal admiration, feared and hated him intensely. On the fourth page we have in a sentence the policy of the French Republic: "Désirer la paix avec l'Autriche et tourner toutes les forces contre l'Angleterre." The Irishman Clarke is sent from Paris to Milan to confer with Bonaparte; we have a fine portrait of the former (p. 6). "Dès le premier salut, il reconnut son maître" (p. 7). Whence this mastership of the twenty-eight-year-old, half-taught soldier, over the most experienced, accomplished, and cunning diplomatists? M. Sorel gives us a powerful picture of Napoleon as he appeared to the eye at that period (pp. 7 and 8). What is the result of the conference? "Après deux semaines cet Irlandais, très-avisé, n'était déjà plus qu'un sous-secrétaire de Bonaparte" (p. 14). The Irishman turns prophet: "Bonaparte sera mis par la postérité au rang des plus grands hommes" (p. 14). It is not necessary to follow the author through the negotiations for peace with Austria at the expense of the Venetian Republic and the German Empire, both comatose (the break-up of the former, once powerful and glorious, is a sad story, of which our author makes the most with consummate skill); *en passant*, it may be well to draw attention to a delicious piece of humour (p. 33), when Napoleon, having had the Miraculous Madonna of Loretto brought before him, examines it carefully for hidden mechanism; but, as M. Sorel drily remarks, "les yeux ne bougèrent point."

Throughout that stormy period Napoleon is the man to whom not only France but most of the nations of Europe look for the ardently desired peace; not only that: he is the man who is to restore the Pope's prestige and the power of the Church. M. Sorel indicates carefully the probable state of his mind. The French Revolution was a necessity arising out of the French Kingdom, a Cesarship a necessity arising out of the Revolution and the Republic. There were but two men

on whom the Cesarship decreed by the imperious march of events could descend: Napoleon and Hoche. Both foresaw it. Both had the same terrific difficulties to contend against. Napoleon placed himself on a pedestal above the turmoil of men and things, and serenely directed both, as it were, from above. Hoche did not rise to a lofty standpoint; he struggled on a level, was constantly vanquished by circumstances, often trivial, and instead of controlling events like his rival, ended in being directed by them. It was a survival of the fittest. Hoche fell ill and died in youth. Napoleon subjugated all and everything, even his own ailing body, to that stupendous and supernal power, the human will, and became French Emperor, Arbiter of Europe, and Attila in the highest potential. This is the tendency of M. Sorel's work. Let those who love subtle reasoning read for themselves.

The second chapter deals with "Le proconsulat de Bonaparte" (in Italy)—that period which shows him at his best. The poets glorified him in stately verse as the Pacificator of Europe, and Beethoven dedicated to him his immortal Eroica symphony.

It is curious to note that the collapse and the dismemberment of the Turkish Empire were generally held (also by Napoleon) to be imminent, and that the liberation of Greece was a pet idea of Bonaparte.

In this chapter the author devotes considerable space to a curious publication of the period, entitled, "Considérations sur la Révolution française," by one Joseph de Maistre, in which the subsequent career of Napoleon (though not by name) and that of France are prophesied with startling accuracy. Take only this one passage (written, be it remembered, in 1796): "Il fallait que le métal français, dégagé de ces scories aigres et impures, parvint plus net et plus malléable entre les mains du roi futur. Les révolutionnaires n'ont travaillé que pour ce roi Le roi remontera sur le trône avec tout son éclat et toute sa puissance, *peut-être même avec un surcroît de puissance*" (p. 110). The italics are ours. How much Bonaparte was impressed on reading this work is apparent from the detailed plans he formed for the immediate future (p. 124): "La paix faite, un de ses premiers soins à Paris sera de se faire nommer membre de l'Institut; il affectera d'en porter le costume dans les cérémonies publiques et, quand il paraîtra en militaire, de réduire l'uniforme au strict nécessaire: un chapeau sans panache, un habit à peine galonné, une redingote flottante." M. Sorel's reasoning tends to show that Napoleon at that time thirsted for civic laurels, and was heartily sick of the jejune glories of camp and battle.

The third chapter is entitled: "La question des limites et le coup d'État." The time seems to breed prophets with fecundity; on p. 130, we have a noteworthy utterance of Delacroix: "Le roi de Prusse dictera la paix; il dépend de lui de s'emparer du Hanovre et de ceindre la couronne impériale." On p. 163, we have a bit of unconscious humour in the quarrel between Barras and Carnot anent Bonaparte. Barras calls Carnot "vile wretch" and "infamous brigand"; the latter retorts with, "beast" and "adventurer." "There is not a louse on your carcase that ought not to spit into your face," exclaims Barras, to which Carnot replies: "I swear it is not true!" Is that not delightful?

The concluding chapter of the first part, "Le traité de paix," which is the most interesting of the book, contains a minute record of the negotiations between Napoleon and the Austrian emissary Cobenzl, of whom a powerful picture is presented. Once more a trained and skilful diplomatist, the successful hero of many a wordy wrangle, was "bested" by the youthful soldier who could not even spell correctly, and Napoleon carried almost every point. One cannot help being struck by Bonaparte's sublime self-sufficiency: "Je ne connais personne qui puisse me remplacer" (p. 210), and "Je m'estime plus haut que tous les rois" (p. 221). On page 236 the reader will find the contemporary French opinion of England summarised as follows:—Éternelle rivale, éternelle ennemie, ouvrière infatigable de ruines, de complots, de guerres civiles

et de coalitions." On the same page the author gives some extracts, extremely funny in their vulgar fulsomeness, of the bombastic greetings which Bonaparte's emissaries received in Paris at the hands of the Directorate. They embrace and kiss copiously, and it all ends in "a universal explosion of tears." They were a set of Vincent Crummies' with a dash of Pecksniff.

The treaty of Campo Formio was the cause of the wars that followed, and Bonaparte foresaw it and worked upon it. He seized the opportunity to gain his private ends, but his enterprise led him—as M. Sorel tersely puts it at the conclusion of his first section—from Moscow to St. Helena.

The second part consists of only two chapters, entitled "La Vendée, l'Irlande et le Rhin," and "le Coup d'État." The greater part is taken up by a narration of Hoche's preparations for that insane enterprise: the invasion of Ireland and the establishment of an Irish republic. It is curious to reflect on the probable consequences of this undertaking, had it taken place and succeeded. There is a fine picture of Hoche, his dreams and ambitions, his integrity and singular purity of purpose, his military genius, and the very littlenesses of his nature: his giving way to fits of despondency, his being swayed by extraneous circumstances, his resigning himself to defeat only to rise again with trebled vitality, his obstinate clinging to that Irish pet project, even after events had rendered it impossible. Through his veins life coursed with an unequalled swiftness, "C'est la hâte de vivre dont il devait mourir" (p. 259), as M. Sorel quaintly puts it. The book is rich in such epigrammatical utterances; we quote but one (p. 286): "À eux trois (*i.e.*, three members of the Directorate) ils ne faisaient pas un homme."

On p. 330 there is an exposition of Hoche's views of a modern Government. He recommends to exclude from universal suffrage but two classes of men: 1. Professional demagogues. 2. Aristocrats. By the latter terms he means undoubtedly those who live (without themselves creating values or distributing created values, *i.e.*, being neither manufacturers nor merchants) on wealth accumulated by others, for instance, by their forefathers. He advocates also the restriction of the Press at election times. "Ni le gouvernement ni les journalistes ne devraient s'interposer entre l'électeur et le candidat. Agir autrement serait faciliter les menées de l'aristocratie et la démagogie." In the two extremes of aristocracy and rabble-movers (whom he places on the same level as "men who exploit society") Hoche foresaw the dangers that threaten the State.

The story of Hoche's illness, death, and funeral, is simply but feelingly told. Of all the inscriptions on the leaves of his laurel-wreath, this is surely the most honourable: "Il chassa les fripons de l'armée" (p. 332). How many generals have failed to realise that the first essential of victory is the purification of the army from within?

The concluding pages of the volume are devoted to a beautifully written contribution to Hoche's sympathetic character. "L'histoire a fixé, dans le bronze et le marbre, l'image de Bonaparte; celle de Hoche apparaît toujours plus fuyante, baignée de cette lumière purpurine, dont Virgile enveloppe l'ombre des jeunes héros, fauchés dans leur matin. Bonaparte a tout consommé: la grandeur jusqu'à l'hyperbole, les défaites jusqu'à la catastrophe. Quelle serait son épopée et combien attrayante aux imaginations, au lieu de fatale et écrasante qu'elle demeure, s'il était tombé le soir de Marengo en plein essor dans l'inconnue? . . . On aime à ne connaître de lui (Hoche) que ses vertus et les promesses de son génie. Il ouvre comme une sorte d'au-delà dans l'histoire de la Révolution" (p. 333). This extract may serve also as a specimen of M. Sorel's stately periods, on which he, like all great writers, has evidently bestowed infinite care.

"A warrior without fear and without reproach," in these words the author sums up his opinion of one of the most attractive figures of the First French Republic.

The "get-up" of the volume is excellent. On a previous occasion the dis-

crepancy in price between English and French productions has been pointed out in these pages. This book in the hands of a British publisher would cost 12s.; its actual price is 3.50 frs.

Krieg und Sieg 1870-71. Ein Gedenkbuch. Herausgegeben von Dr. J. von PFLUGK-HARTTUNG, kgl. Archivar am Geheimen Staatsarchive in Berlin.

Berlin: Schall und Grund, Verein der Bücherfreunde. Price 6 marks = 6s.

This is a book for non-readers of German as well as for readers of German, and members of the Institution who have six shillings at disposal for literary purposes are therefore recommended to invest that sum in the purchase of a copy of "*Krieg und Sieg*"; and this quite irrespective of whether they set their faces against "goods made in Germany" or not, and whether or not they are large-minded men who take an interest in the facts of history as a whole, or small-minded ones who stick with tolerable tenacity to "one campaign."

The book measures $11\frac{1}{2}'' \times 8\frac{1}{2}'' \times 1\frac{3}{4}''$, and contains some 700 pages of excellent paper. On these pages the reader will find, in very clear type, a most admirable, accurate, and up-to-date account of the war; among them nearly fifty clearly drawn maps, of which nineteen cover a whole page, and two are inserted; these maps are valuable to anyone, whether he knows German or not, or if he studies any part of the war in some English book or pamphlet. But on a map, a place or locality is shown by a symbol called a name; so in order that the reader of the names may realise their meaning, there are given in "*Krieg und Sieg*" upwards of 150 drawings, landscapes and sketches, or bird's-eye views of the principal places and localities. So far as the writer's personal knowledge of these localities goes, they are most faithfully reproduced in the sketches; even the little sketch of the corner of the park at Coulmiers, recalling this locality vividly to memory. Medallion and other portraits are given of some hundred of the principal actors in the war, these being judiciously placed in the text, so that as we read of the escape of the XIII. French Army Corps from Megures to Paris, the portrait of its leader, Vinoy, is confronted by that of Von Tümppling who tried in vain to stop him; in addition, are some beautifully executed battle scenes, some illustrations of typical incidents of war, types of soldiers, and artistically executed initial letters. But to the military student who can read German, the work is a real blessing, for in a comparatively small space he finds an excellent account of the war. This is divided into sections of which the writers are men who took part in it. Lieut.-General von Boguslawski heads the list, with, as his collaborateurs, Generals Pfister, von Voretzschman, von der Goltz-Pascha, von Holleben, von Heinlett, Oberhoffer, Colonel Cardinal von Widdern, and other officers and civilians. Some forty artists, including many of high standing in their profession, have also contributed their services. Dr. von Pflugk-Harttung, who is himself a Government official, and as a volunteer fought with the 75th Regiment during the war, contributes some of the text, as well as edits the whole. He is not only to be most heartily congratulated on the success of his labours, but he deserves our gratitude for having placed within reach of the possessor of slender purses an *édition de luxe*, as valuable as a work on military history as it is for its literary and artistic merit. May, some day or other, the time come when we can produce in this country similar goods, as valuable and as excellent as this one "made in Germany."

Bohemia: An Historical Sketch. By FRANCIS, COUNT LÜTZOW. London: Chapman and Hall, 1896.

It is true that the history of Bohemia as an independent country is short, ending with the battle of the White Mountain, in 1620; but even so it is an historical period of intense interest, and this for two reasons:—Firstly, the religious questions, that afterwards convulsed Europe, were first thrashed out in

Bohemia; and secondly, the art of war underwent distinct development at the hands of the Hussite leaders. Indeed—in spite of the strong disclaimer of the author—it is quite possible that the presentation of the past history of the Bohemian nation now put before us, is bound to have a decided influence on our English views of the present political dissensions of the Bohemians. The book is limited, except for a dry record of the early annals and a note upon the national literature, to the story of the Hussite wars, and after that the tale of “The Winter King,” the son-in-law of our own James I. And this is but natural, for the whole history of independent Bohemia begins with Huss, and ends with the catastrophe of the “Bila Hora.” Within that limited period, however, questions of deep interest to Englishmen were agitated, if not solved. The Hussite movement was the direct offspring of our English Wycliffe’s bold protest against the corruption of the Universal Church. In England the Lollards, the followers—mayhap somewhat too fanatical—of the “Morning Star of the Reformation,” were crushed by the civil power, and especially by the act “de Heretico Comburendo.” So in Bohemia the Papacy, wielding the Imperial sword, extirpated, in spite of prodigies of valour, the disciples of Huss. It cannot be denied that the Hussites were the first exponents of the democratic principle in the States-System of Europe, the communal organisation of certain petty Alpine cantons notwithstanding. Moreover, the Hussite doctrines descended to the Moravians, the first of the Reformed Churches to embark on missionary effort, and the sect whose doctrine made captive and decided the dogma of John Wesley. Nor does this exhaust the claims of Bohemian history on the interest of the English reader. The military tactics of Ziska constituted an innovation which had much to do with the breaking down of the old superiority of mail-clad knight, or their mail-clad “ritters,” over the peasant infantry. “The wagons of the Bohemian armies were linked together by strong iron chains and were used, not only for defence, but for offensive movements.” In other words, the system of “laager,” so efficacious against a rush, was not only employed to neutralise the cavalry charges of the aristocratic forces the Empire hurled on the Hussites, but also was made so mobile and flexible as to render offensive tactics possible. The reader is referred to Count Lützow’s own pages for the details of the campaigns in which the “Wagenburg” of the blind Ziska won battle after battle and became the terror of Germany. Count Lützow well brings out the whole melancholy story of how dissensions and party strife ended in the subjugation of Bohemia to the Imperial rule of the Hapsburgs. Authorities are quoted freely, and the notes are excellent. It is easy to appreciate the value of Count Lützow’s contribution to European history when we remember that Gibbon, the prince of historians, makes no mention of the victory of the Bohemians over the Tartars at Olmütz. In the yesterday of contemporary history new Slavonic States have arisen in Europe, and Bohemia despite her Germanic element is a true Slav country, and one moreover that cherishes its traditions. When the long reign of Franz Joseph comes to an end, it may be that the question of Bohemian nationality will become an acute one; and for this reason it would be well if politicians, as well as students, would turn their attention to the national history of this important appanage of the Imperial crown of Austria. A study of such a book as this will well enable them to appreciate the national aspirations of the Bohemians. In conclusion, it must be added that Count Lützow need be under no apprehension of criticism of the literary excellence of his English, for had he not himself stated that he does not write in his own language, no one would have guessed it.

Brigade Drill and Ceremonial. By Captain W. D. MALTON. London: W. Clowes and Sons. Price 1s. 6d. This is the revised reprint of a small work that has passed through many editions, and is extensively used throughout the Service. It places before the eye, in a convenient form, the battalion detail to which Part IV. of the new Drill-book refers, and it is strictly accurate.

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